

RAILWAY

TRACK *and* STRUCTURES

One of Five Specialized Railways Age Publications



R-139

THE NATION'S "STAR PERFORMER" on CURVES

MECO

**rail and flange lubricators
for curve rail safety and economy.**

MECO Lubricators are always "in there pitching" to help "strike out" high operating costs and curve rail hazards on a majority of North American Railroads. MECO actually doubles to quadruples curve rail and locomotive wheel flange life.

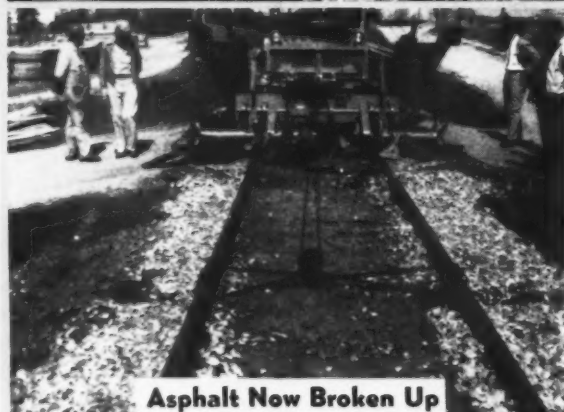
Other MECO Products: Velocity Power Rail Punch • Mack Reversible Switch Point Protectors (Prolong Switch Rail Life) • Meco Rail Layers (Lay Standard, Long, or Continuous Welded Rails) • TYLIFE (Bonds Spikes or Tie Plugs into Ties).

Maintenance Equipment Company

RAILWAY EXCHANGE BUILDING • CHICAGO 4, ILLINOIS



Scarifying Asphalt Road Crossing



Asphalt Now Broken Up



Plowing Out Asphalt



Ready for Surfacing

SCARIFY and REMOVE ROAD CROSSINGS

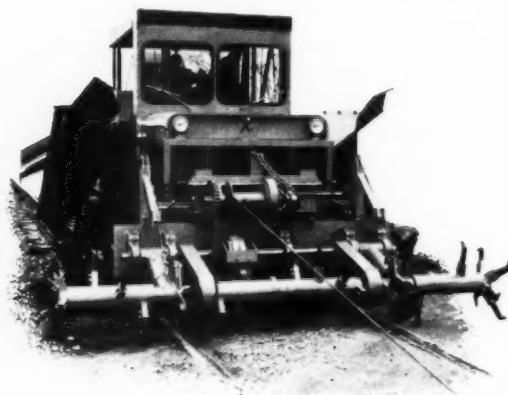
... the *Fast*
Economical Way

The Road Crossing Scarifier attachment to the Kershaw Ballast Regulator, Scarifier and Plow provides the quickest, most economical method to scarify road crossings.

A steel cable is used to pull the machine through the crossing, with the scarifying teeth on the revolving drum cutting through cemented dirt, ballast, or macadam.

The Ballast Regulator then is used to plow out all the scarified material from between the rails down to the tops of the ties.

How long does it take? Only a matter of minutes!



KERSHAW
MANUFACTURING CO. INC.

MONTGOMERY



ALABAMA



How could this guard rail overturn?

As the wheels roll smoothly into the flangeway, they actually anchor the Bethlehem Hook Flange Guard Rail in place. The trick is in the special "hooked" flange which lies beneath the running rail, where the full wheel load of every truck pins it down. With all that weight to keep it right where it belongs, how *could* this guard rail overturn?

It just can't. Nor can it spread. Even under sharp side thrust, the Hook Flange Guard Rail steadfastly holds the line because of the double-shouldered tie plates

which engage the bases of both running rail and guard. Thick, heavily-welded side braces further reinforce the guard rail where help is needed most: opposite the frog point.

The Hook Flange Guard Rail is about as easy to install as a guard rail could be. No holes to drill, no blocks or clamps to fit in place. Just a sturdy, one-piece length, bolted through predrilled holes to the special tie-plates described above. And that's it!

So far as we know, the Bethlehem Hook Flange Guard Rail has

never broken under traffic. That should stamp this reliable safeguard as the safest of its kind ever made. One of our representatives will gladly give you the full story, and set up a visit to a nearby installation if you wish. You can make the necessary arrangements through the nearest Bethlehem district sales office.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

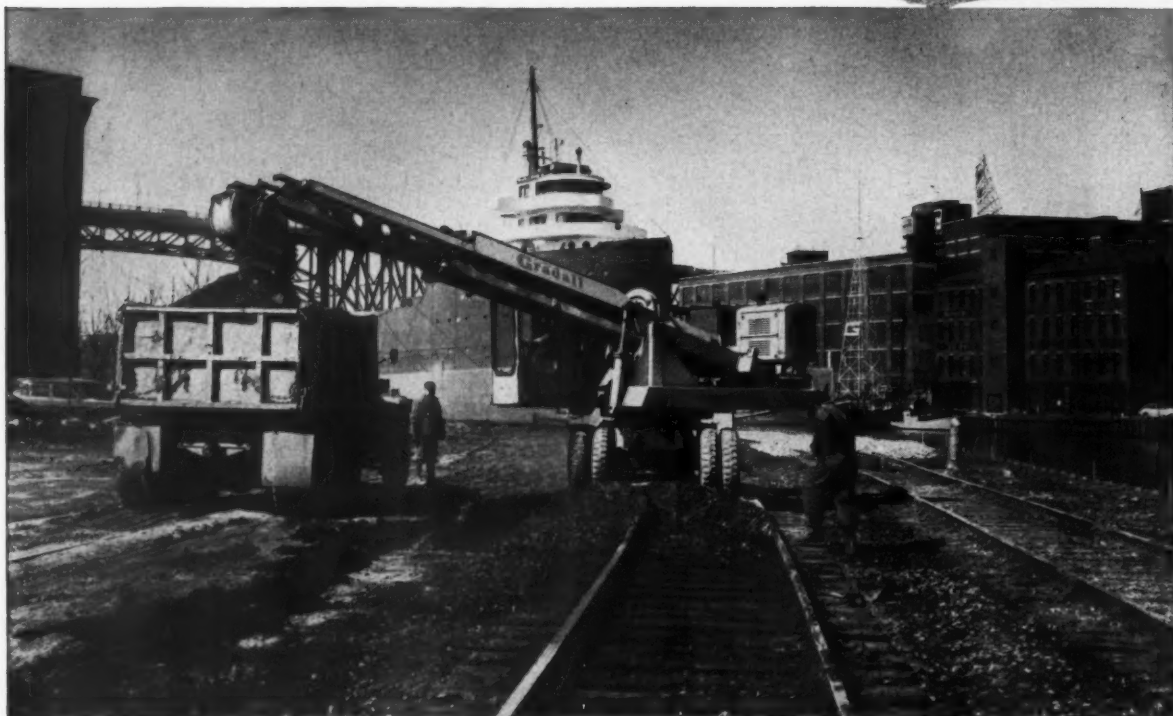
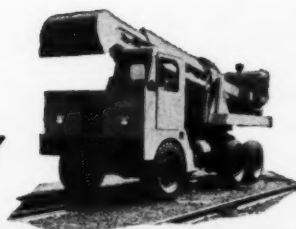
On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributors: Bethlehem Steel Export Corporation



BETHLEHEM HOOK FLANGE GUARD RAIL

Published monthly by Simmons-Boardman Publishing Corporation, Emmett Street, Bristol, Connecticut, with editorial and executive offices at 79 West Monroe Street, Chicago 3, Illinois; 30 Church Street, New York 7, New York. Subscription prices: to railroad employees only in the United States and Possessions, and Canada, one year \$2.00. Second class mail privileges authorized at Bristol, Conn. Volume 52, No. 6.

Gradall® ONE MACHINE FOR COMPLETE MAINTENANCE OF WAY



Gradall replaced two other pieces of equipment on this Cleveland dockside track cleaning project, did the job better, and increased production to 600 feet per day. It graded off shoulders, cleaned between rails, and even in between ties.

WITH a single investment in a Railroad Gradall you have a multi-purpose machine that handles the work of several single-purpose machines.

You'll keep a Gradall busy the year 'round, on all kinds of jobs. It has the power for the tough ones, like digging in rock, and the arm-action accuracy for close finishing work. With its many attachments—carried right on the Gradall, and interchangeable in 4½ minutes—it's virtually a one-machine work train without the train. With over-size, track-climbing tires, it can cover every mile of your right-of-way—drive right down the track, cross country, or by highway.

Before you invest in any other maintenance equipment, see a multi-purpose Gradall in action. To arrange a field demonstration on your work, write: Gradall Division, Warner & Swasey Company, Cleveland 3, Ohio.

**Gradall Distributors in over 75 principal cities
in the United States and Canada**

GRADALL CUTS COSTS ON ALL THESE RAILROAD JOBS

- Cleaning tracks and roadbeds
- Maintaining ditches
- Laying rail
- Restoring embankments
- Trenching and backfilling
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- Placing culverts, pipe, etc.
- Hand finishing and clean-up.



® Reg. U.S. Pat. Off.

YOU CAN DO IT BETTER, FASTER, FOR LESS WITH A GRADALL

Nalco

WEED CONTROL

**Helps Keep Maintenance
Costs Down on the**

◆ Combining excellent maintenance records with unusually low total costs is an achievement that the Erie Railroad—and more particularly Mr. Blair Blowers, Chief Engineer, and his Staff—report with justifiable pride.

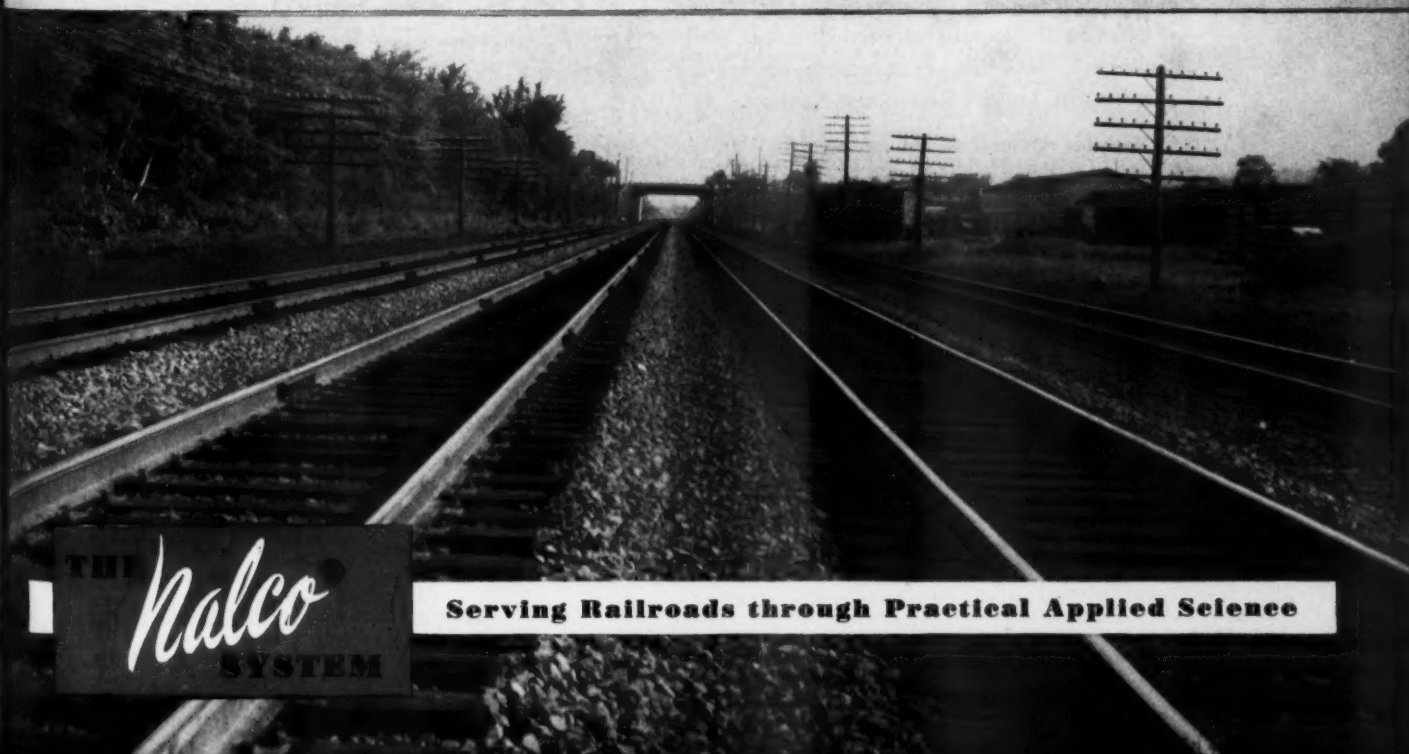
Use of Nalco Weed Control along Erie right-of-way is a part of the complete picture of effective, economical maintenance. Chances are good that the complete range of Nalco Weed Control Chemicals and Nalco Spray Car Services can help you cut costs on all-season weed control. Call your Nalco Representative for details; or write direct.



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SPRAY SERVICES DEPARTMENT

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THE
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SYSTEM

Serving Railroads through Practical Applied Science



Year after year, mile after mile conventional rail is being replaced by trouble-free, continuous rail.

Longer rail life at LESS COST WITH "RIBBONRAIL" SERVICE

Leading railroads throughout the nation are eliminating the expense of assembling and maintaining rail joints. Here are some of the savings now possible with LINDE's RIBBONRAIL SERVICE.

1. Reduces Overall Maintenance. There are no angle bars, bolts, nutlocks, and copper bonds to install or replace. Maintenance on rolling stock is less too. Wear and tear on motor housings, car wheels, axles, and bearings is substantially cut down.

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bond does away with battered rail ends . . . and trouble from loose, out-of-line, or worn rail joints is eliminated.

3. Improves Rail Riding Quality. By reducing the operating vibration, continuous rail decreases spillage, and vastly improves riding comfort.

LOOK TO "LINDE" . . . the leader in continuous rail welding, and plan your RIBBONRAIL SERVICE program now. Call or write the Railroad Department of LINDE AIR PRODUCTS COMPANY.

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Linde Air Products Company
A Division of Union Carbide and Carbon Corporation
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The terms "Linde" and "Oxweld" are trade-marks, and "Ribbonrail" is a service-mark of Union Carbide and Carbon Corporation.

Supplying to railroads the complete line of welding and cutting materials and modern methods furnished for over forty years under the familiar symbol . . .



RAILWAY TRACK and STRUCTURES

**The NEW
NORDBERG**

Tamping Power Jack



One Man Operation to Raise Track and Tamp Key Ties at Lifting Points

Here is another new Nordberg machine that will reduce your track maintenance costs . . .

The Nordberg Tamping Power Jack combines many of the features of Nordberg's well known Power Jack with those of its automatic Gang Tamper into a self-propelled machine which raises track and tamps key ties at lifting points.

The Nordberg Tamping Power Jack has two independently operated hydraulic rams which can accomplish a lift on either or both rails. The manually controlled tamping head carries four tamping bars, two inside of each rail, assuring solid tamping of the key ties.

Practically every part of the machine, including the tamping element, is contained inside the wheel gage so that it can be used at station platforms, in ballasted bridges and at any points of restricted side clearance. This feature also affords an excellent view of the rail to the man sighting the track.

A cross level and sighting targets, as well as a power actuated hydraulic set-off arrangement are built-in features of the Tamping Power Jack.

For further details on the new Nordberg Tamping Power Jack, write for your copy of Bulletin 259.

NORDBERG MFG. CO., Milwaukee, Wisconsin



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"Mechanical Muscles"®

ADZING MACHINE • TIE DRILL • RAIL
DRILL • RAIL GRINDERS • CRIBEX® •
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MACHINE

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R256



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NEW *Most Powerful One Man Chain Saw You Can Own*



7 horsepower
29 pounds

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MANUFACTURERS OF CARRYABLE PUMPS • GENERATORS • BLOWERS • CHAIN SAWS

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**Complete Line
of Chain Saws
for Every
Cutting Job**



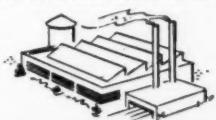
MODEL 17 — An all purpose saw that brings down trees up to 4 feet in diameter. Available with special brush cutting and clearing attachments for complete versatility 3.5 horsepower 22 lbs.



MODEL 5-20 — All the versatility of the 17 with added power, lighter weight. 5 full horsepower — 20 lbs. Brings down trees up to 6 feet in diameter.



MODEL EZ — Lightest, most powerful direct drive chain saw ever developed. Only 19 pounds, full 5 horsepower. Brings down trees up to 3 feet in diameter.

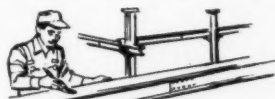


PROVED THROUGHOUT INDUSTRY FOR OVER THIRTY YEARS

Industrial leaders all over the world have used Rust-Oleum to stop and prevent rust for over thirty years. Rust-Oleum can do the same for your tanks, stacks, pipes, machinery, metal sash, wire fences, girders, etc.

RUST-OLEUM IS EXCLUSIVE

Rust-Oleum uses a specially-processed fish oil vehicle that penetrates rust to bare metal, dries right, and is free from objectionable odor. Accept no substitutes. Buy—and specify Rust-Oleum. You'll be happy that you did. There is only one Rust-Oleum—it is distinctive as your own fingerprint.



APPLY DIRECTLY OVER RUSTED SURFACES

Just scrape and wirebrush to remove rust scale and loose rust—then brush Rust-Oleum 769 Damp-Proof Red Primer right over the remaining rust, usually eliminating costly surface preparations. Then—follow-up with your desired Rust-Oleum finish color.

MANY COLORS, INCLUDING ALUMINUM AND WHITE

You beautify as you protect, because Rust-Oleum finish coatings are available in practically all colors, including aluminum and white. They use the same basic rust-inhibiting vehicle as Rust-Oleum 769 Damp-Proof Red Primer and so provide double protection.



GREATER COVERAGE— EASY TO USE

Rust-Oleum is so easy to apply by brush or spray that one man can often do the work of two. Because of Rust-Oleum's easy-flowing qualities, an average of 30% more coverage is usually received—depending upon the type and porosity of the surface.



PRACTICAL ANSWER TO YOUR RUST-PRODUCING CONDITIONS

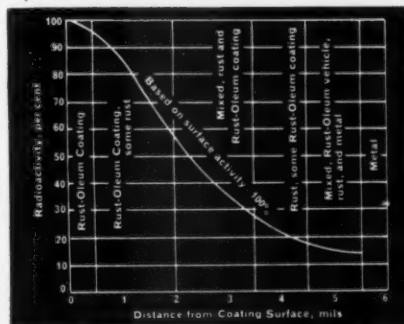
Rust-Oleum dries to a firm, decorative finish that resists salt water, heat, fumes, sun, steam, humidity, and weathering. Whatever your rust problem—you'll find Rust-Oleum the modern, practical way to stop rust.

Facts

prove the economy of

RUST-OLEUM®

Geiger Counter traces Rust-Oleum penetration through rust to bare metal. The results of radioactive research prove that Rust-Oleum penetrates rust to bare metal. Rust-Oleum's *specially-processed* fish oil vehicle was radioactivated and formulated into Rust-Oleum 769 Damp-Proof Red Primer—then applied to rusted test panels. Geiger Counters then traced Rust-Oleum's *specially-processed* fish oil vehicle through the rust to bare metal. This penetration enables Rust-Oleum to be applied directly over sound rusted surfaces—usually eliminating costly surface preparations. Attach coupon to your business letterhead for your thirty-page report, "The Development of a Method To Determine The Degree of Penetration of a Rust-Oleum Fish-Oil-Based Coating Into Rust On Steel Specimens," prepared by Battelle Memorial Institute technologists.



Curved chart line shows Geiger Counter recordings of Rust-Oleum penetration at each mil level.

RUST-OLEUM®

STOPS RUST!



ATTACH TO YOUR LETTERHEAD—
MAIL TODAY!

Rust-Oleum Corporation
2548 Oakton St.,
Evanston, Illinois

- ☐ Complete literature with color charts.
- ☐ Thirty-page report on Rust-Oleum penetration.
- ☐ Nearest source of supply.

Your Rust-Oleum Railroad Rust Prevention Specialist will be happy to give you complete details.



This railroad *Saves* by “blitzing” brush the Bogle way.

There are other ways of going after brush, of course, but in this high cost labor era, you're looking at the method a railroad can best afford. Grubbing, cutting and burning are costly and not as effective, time-wise. As for speed, there's no comparison. Miles-per-hour, not days-per-mile is the way you measure the progress of the Bogle spray train.

Naturally, the right chemical in the right concentration is important. 2,4-D and 2, 4,5-T and Ammate are among the best for brush control. The amount and frequency of application are things which Bogle recommends only after careful study of conditions on your road. If you would like the benefit of 32 years' experience in just one thing—vegetation control—get in touch with Bogle without obligation.



THE R. H. BOGLE COMPANY

Alexandria, Virginia — Memphis, Tennessee

Complete Weed and Brush Control Service

You're on the track, or off, in a jiffy!

... with the
HYSTAWAY®
 EXCAVATOR
 CRANE



Whether you are laying rail, doing right-of-way maintenance, bridge work—or any other job—you can get the Hystaway off the tracks in a few seconds, and then get it on again just as fast. Mounted on a new or used Caterpillar* Diesel Tractor, the Hystaway travels at tractor speed **on or off** rails. One railroad reports being able to do four days work in one day compared to other methods.

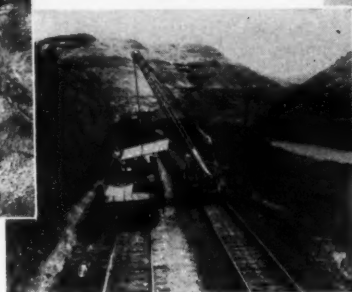
Hystaway gets to the job under its own power, on or off rails. You get operational flexibility not possible with other types of equipment. On this page are shown five of the many ways railroads are using Hystaway today.



2 Drainage Work



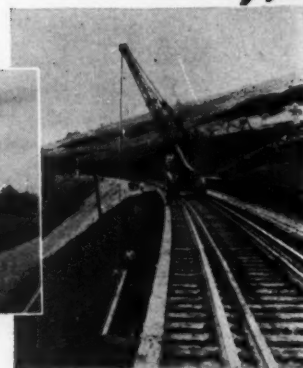
3 Handling Construction Material



4 Right-of-Way Maintenance



5 Bridgework

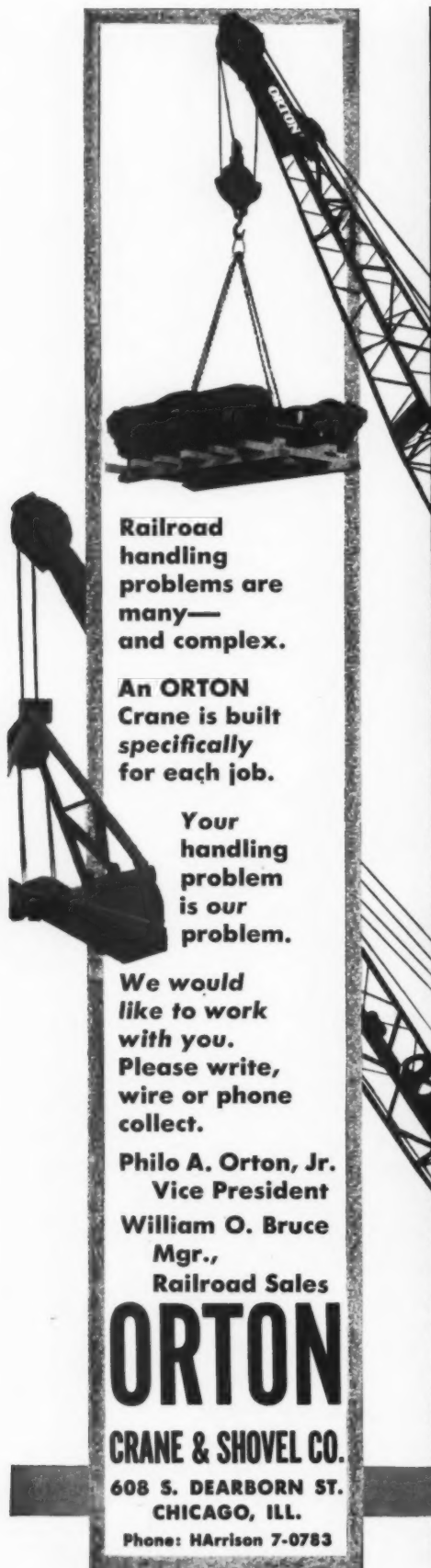


HYSTER COMPANY

For full details, call your Caterpillar Tractor Co. Dealer
 He is also your Hyster Dealer

* Cat and Caterpillar are registered trademarks of the Caterpillar Tractor Company

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 Portland, Oregon; Peoria, Illinois; Nijmegen, The Netherlands



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problems are
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and complex.

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Crane is built
specifically
for each job.

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Mgr.,
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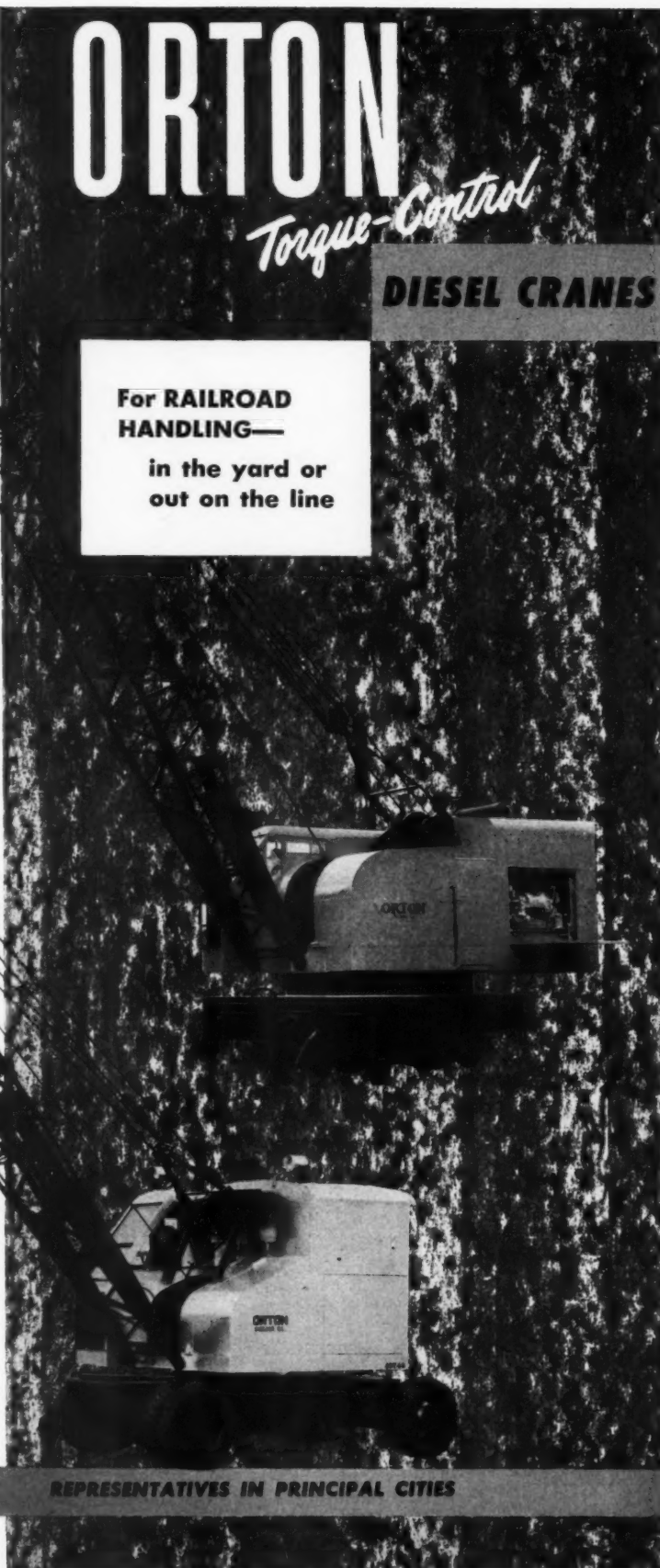
ORTON

Torque-Control

DIESEL CRANES

**For RAILROAD
HANDLING—**

**in the yard or
out on the line**



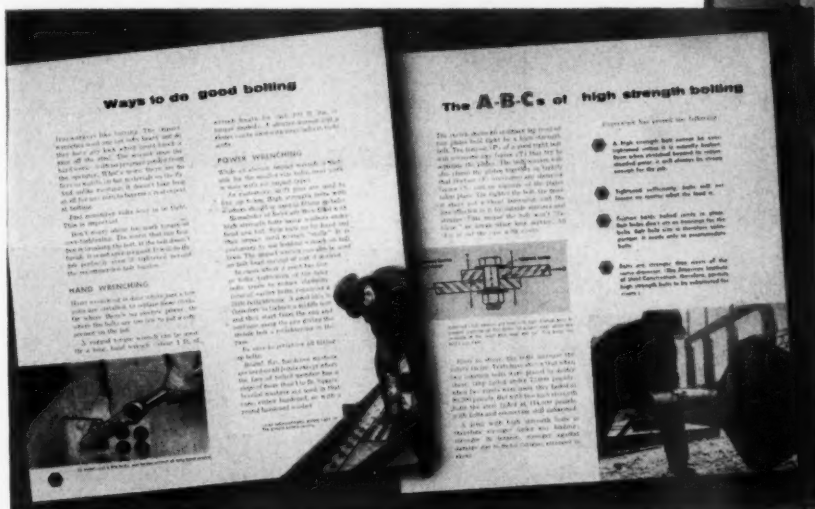
REPRESENTATIVES IN PRINCIPAL CITIES

New RB&W Booklet gives the plain facts on bolting

...a big help for steel constructors

THIS NEW instructive booklet was prepared with ironworkers in mind. Quickly and to the point, it gives all the information a man needs in order to use high strength bolts to make a better steel joint . . . whether he's erecting a building or bridge, or repairing equipment.

It's timely information, too. More and more buildings are now being bolted instead of riveted. RB&W is proud to have pioneered in this development. Send for free copies of this booklet — and tell us how many you want for your men.



RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY
Port Chester, New York

Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. Additional sales offices at: Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. Sales agents at: Milwaukee, New Orleans, Denver, Seattle. Distributors from coast to coast.

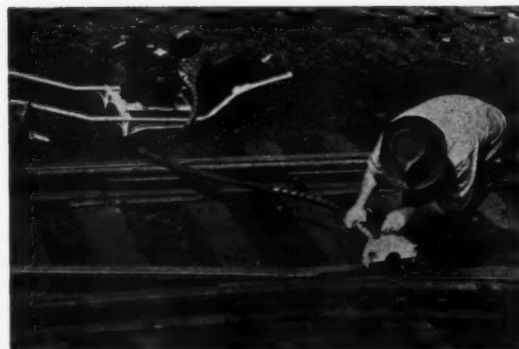


...the largest independent producer of high strength bolts for construction

Reduce Rail Maintenance Costs with RTW Grinders and Drills

The Model P-22 Portable Flexible Shaft Grinder

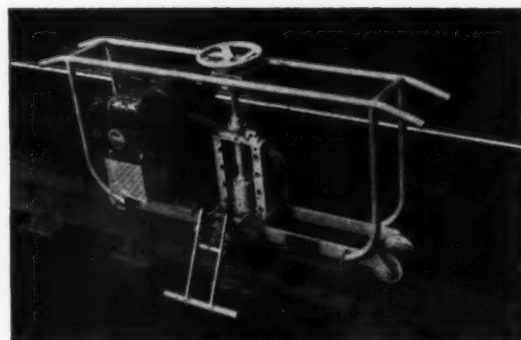
The Model P-22 Portable Flexible Shaft Grinder speeds the free hand finishing of surface welds on rail ends, crossings, frogs, flange ways, switch points and stock rails. This grinder is mounted on a one wheel carriage for easy transporting. A 6 hp air-cooled gasoline engine drives a counter shaft to which a flexible shaft is coupled. The engine is mounted on a ball bearing swivel plate which permits the maximum free movement in handling the flexible shaft which transmits the power to the grinding wheels. The speed of the grinding wheels can be regulated by a governor adjustment on the engine, so as not to exceed maximum speed of 9,500 surface feet per minute permitted under the safety code for high speed grinding wheels.



MODEL P-22

Model P-45-A Portable Rail Surface Grinder

Model P-45-A Portable Rail Surface Grinder is an easily portable one-man Cup Wheel Grinder. It is modern and has been designed for greater durability and accuracy in grinding welded rail ends, removing mill tolerance and scale ahead of heat treatment of rail ends. This grinder will give a very smooth highly polished surface. The Model P-45-A is powered by a 3½ hp air-cooled gasoline engine with a V-Belt drive that acts as an overload release to prevent damage to other moving parts. An attachment is provided for tightening the V-Belt. A screw in a vertical slide frame equipped with bronze gibs permits take-up adjustment to compensate for wear and gives accurate adjustment to the Cup Wheel.



MODEL P-45-A

The Model P-43 Power Track Drill

The Model P-43 Power Track Drill embodies many features to help to speed rail maintenance at reduced cost. It is powered by a 1½ hp air-cooled gasoline engine. The V-Belt drive acts as an overload release in the event the drill bit becomes cramped or sticks during operation. There are quick and simple adjustments for leveling the drill both on the top of the rail head, and supporting screws insure perfect alignment when drilling through angle bars or for bare rails. In case a bit binds and causes the motor to stall before a hole is completed, a stop on the rail head bracket permits the backing out of the bit. Positive, easily controlled screw for feeding bit. A telescopic extension in the rail head bracket facilitates drilling around switches. Openings up to 13" fully extended, permits drilling at the heel of switches and other locations around switches, the drilling of rails and guards in position. An outrigger attachment can be supplied if it is desired to use this machine on the track. It is quickly attached or detached for on or off-track operation. A knurled appliance between the handles of the outrigger provides a means for leveling the machine to compensate for various weights of rail.



MODEL P-43

Write today for complete information covering the equipment described above or on any of the equipment listed below.

TRACK MAINTENANCE MACHINERY

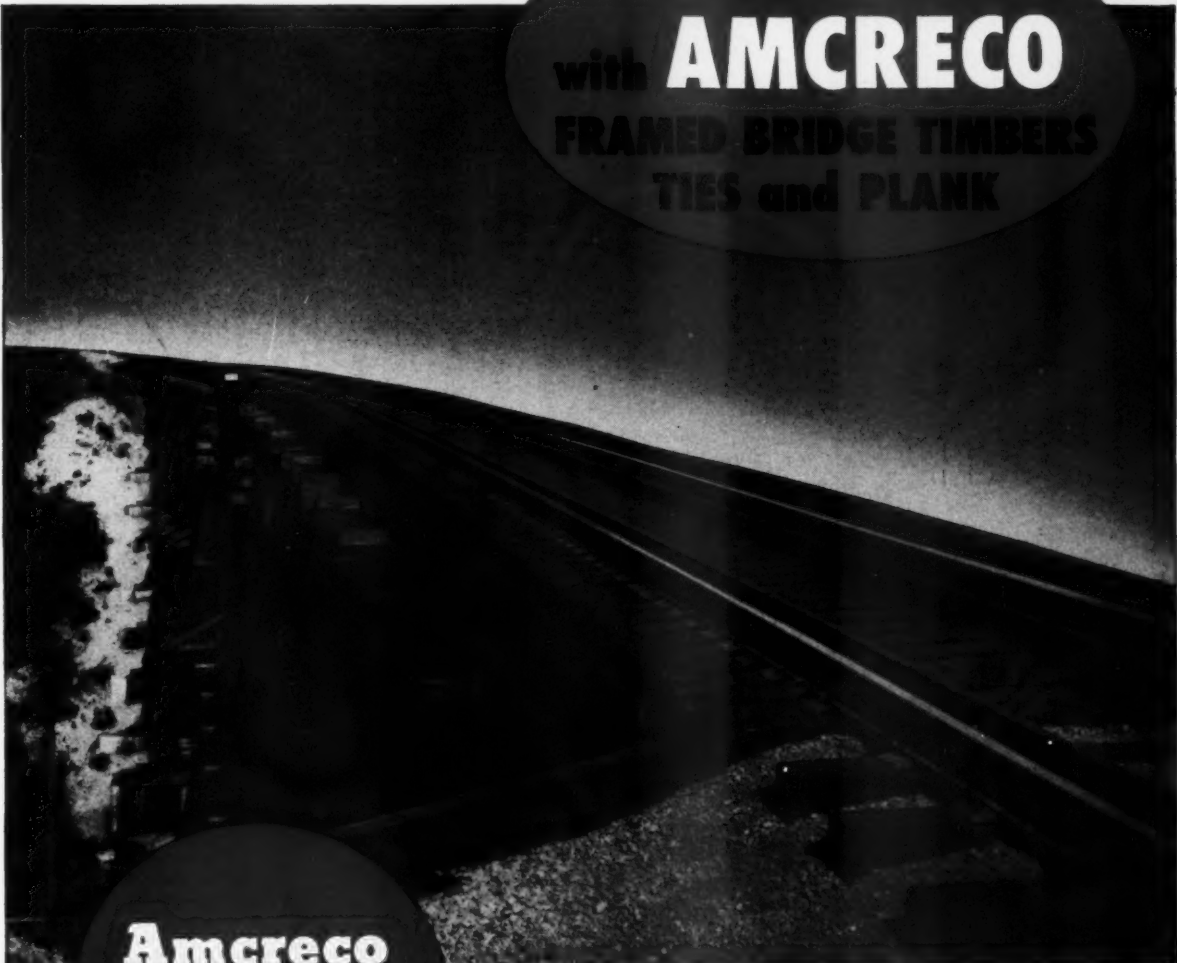
Rail Grinders • Switch Grinders • Cross Grinders • Surface Grinders • Rail Drills • Ballast Extruders • Bit Sharpeners • Tie Nippers • Grinding Wheels • Cut-off Wheels • Track Liners

Railway Trackwork Co.

3207 KENSINGTON AVE., PHILADELPHIA 34, PA.

BRIDGE BUILDING IS FASTER . . . EASIER . . . MORE ECONOMICAL . . .

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FRAMED BRIDGE TIMBERS
TIES and PLANK



Amcreco
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Creosoted
Products

Timbers • Bridge Ties
Adzed and Bored Cross Ties
Poles • Plank

Build longer lasting timber bridges — faster and easier by building with Amcreco framed bridge timbers, ties and plank. Speedy erection means fewer man hours and lower first costs.

You save in the long run too, because Amcreco products are pressure treated with creosote to protect the natural strength of the wood from insects, fungi and marine borers. This means extra years of service with reduced maintenance throughout the life of the structure.

Take advantage of our nearly half a century of experience in serving the railroad industry. Any of our conveniently located sales offices will be pleased to go over your next requirements with you.

AMERICAN CREOSOTING COMPANY

Colonial Creosoting Company
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Gulf States Creosoting Company
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GENERAL OFFICES: LOUISVILLE 2, KENTUCKY
12 FIELD SALES OFFICES TO SERVE YOU

ONLY NEW INTERNATIONAL

give you bonus horsepower to speed your maintenance

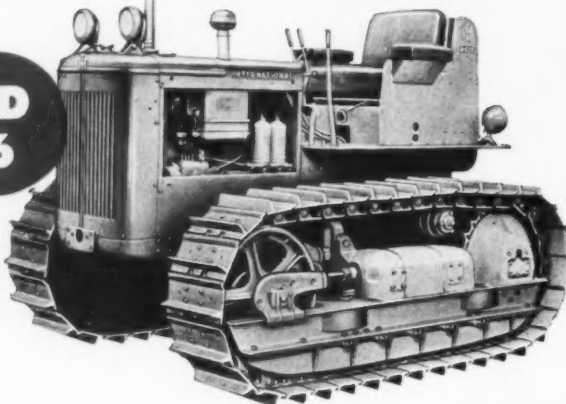
When you put a new bonus-powered International crawler on your railroad job, you can be sure of added production. Your operators save time because these tractors start *seconds-fast* with push-button in-seat ease. They ride in easily-adjusted "club-car" comfort to command exclusive new job-bossing panoramic vision.

New power-holding, heat-defying, long-lasting cerametallic engine clutch facings cut

clutch release effort 50%. New booster steering cuts fatigue as much as 75%! New pressurized cooling systems are "standard"—so are new power-train and track-frame strength; and new high-efficiency seals and filters! These new crawlers are "bonus-powered profit-makers." Let us prove 'em with a demonstration on *your* line. Call your nearest International Construction Equipment Distributor to arrange details.

NEW TD 6

boosted 23% to 50 net, 45.5 drawbar hp (55 net, 41.5 dhp in loader models). Easy to transport, weighs only 8,890 lbs.



NEW TD 9

boosted 32% to 66 net, 54.5 drawbar hp (71 net, 60 dhp in loader models). New power is backed by new power train, stronger track frame.



Here's one of the new bonus-powered International crawlers, a TD-9, hard at work improving drainage along a spur line near Chicago. With 66 belf hp, this tractor boasts more power than any other crawler in its class. The operator puts the greater power to work easier, because he sits comfortably in a new, raised, foam-rubber, adjustable seat, handles easy-to-reach fatigue-reducing control levers. Hydraulic Bullgrader blade moves over a yard of clay per pass, readily interchanges with bulldozer or grubber blade. A wide variety of other attachments—including winches, swing cranes, rippers, fork-lifts, and Skid-Shovels—gives this tractor "versatility unlimited."



Many railroads report exceptional economy from the use of International wheel tractors. With six sizes to choose from, 9 to 59 drawbar hp, these units can be equipped with mowers, front-end loaders, backhoes, post-hole diggers, dozers or snow plows, and over 40 other attachments to speed maintenance work. Here, a 19 dhp Model 100 mows along the Texas and Pacific right-of-way in Bunkie, Louisiana. Roadmaster estimates each of the four "100's" used in this area mows 8 miles of 30-ft right-of-way per 8-hour shift. Fuel consumption averages 7 gallons of 26¢ gasoline per tractor per day.

ALL-CRAWLER TRACTORS

plus new design,
off-way jobs



NEW TD 14

boosted to 95 net, 78.5 dhp (100 net, 83 dhp in loader models). Features better visibility, new equipment carrying and operating strength.



NEW TD 18

124 net, 103 dhp (134 net, 111 draw-bar on loader models). Gives you "new look" visibility, plus operating ease never before available.

TD-24

Still leader of its class. Available in 190 dhp gear-drive, or 200 bhp torque converter models. Both boost output through instant high-low gear range, full live power on both tracks when turning.

ALL-NEW PAYHAULERS[®]

For hauling rock or shovel-loaded ballast on major right-of-way relocations, the all-new International Payhaulers are setting economy records. In these rear-dump haulers, now available in two sizes, 18 and 24 tons, you have greater horsepower-to-payload ratios than are available in any other off-highway trucks. You have stronger main frames for reduced maintenance costs . . . with strengths of 108 to 130 inches cubed, **50 to 100% over other trucks**. You have higher speeds, 36 to 38 mph . . . full-power hoists . . . better visibility. Investigate Payhaulers before you buy any off-highway trucks. You'll find them a worthwhile investment.

Measure . . . compare . . . prove to yourself . . . these new International machines beat all others for high-speed, low-cost maintenance-of-way work. Write us for all the facts or contact your local International Construction Equipment Distributor.



INTERNATIONAL[®] Construction Equipment

International Harvester Company, 1400 N. Michigan Avenue, Chicago, Illinois 60642

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Tractor-Engine Tractors . . . Self-Propelled Scrapers and Bottom-



One of the 160 Uses of CONCRETE on Railroads

NO. 31 OF A SERIES

This is the reinforced concrete frame, with a pan type floor system, of the new offices for The Kansas City Southern Railway Company in its yards 12 miles north of the city of Shreveport, La.

Reinforced concrete building frames are just one of more than 160 uses for portland cement and concrete which enable American railroads to improve service and save time and money. The moderate first cost of such concrete improvements—plus their long life and low maintenance cost—result in *low annual cost*. This saves money for other items.

PORTLAND CEMENT ASSOCIATION 33 West Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work



Picture courtesy of N.Y.N.H. & H.R.R.Co.

BIRD SELF-SEALING TIE PAD AFTER 5 YEARS SERVICE is removed for inspection. Pad had to be pried from tie owing to tenacious seal that is characteristic of all Bird Tie Pads. Reapplied, and becoming resealed after inspection, the Bird Tie Pad is good for many additional years of protective service.

Slash your tie costs 50% with BIRD Self-Sealing TIE PADS

FACTS YOU SHOULD KNOW ABOUT BIRD TIE PADS

It is common knowledge that moisture and abrasive materials destroy the supporting power of the wood under the tie plates and the holding power of the spike wood.

The Bird Self-Sealing Tie Pad was specifically developed to combat these destructive agents. *For that reason, it is entirely different in design, construction and function from any other tie pad on the market.*

This difference lies in the ability of the Bird tie pad to maintain dimensional stability. It cannot stretch or compress under passing wheel loads . . . so that it provides a constant, unbroken seal.

The Bird Self-Sealing Tie Pad completely and permanently seals out moisture and abrasives . . . the causes of decay under the plates . . . and, in addition to this, it prevents mechanical wear by acting as a buffer between the tie plate and the tie.

As specialists in the scientific preservation of wood for much of our 161 years in business, we are qualified to help you extend the service of your ties in track.

WHERE

- On the joint and shoulder ties of insulated joints.
- On new or older bridge decks.
- On switch timbers.
- Under crossing frogs.
- Through highway grade crossings and station platforms.
- On curves to insure holding track to gauge and surface.
- With smaller tie plates.
- Out-of-face with new or relayer rail.
- On pile cut-offs.

RESULTS

- You get 50% extra life from new ties.
- You get twice the normal remaining life expectancy from old ties that can be adzed to a smooth surface of sound wood.
- You save on gauge, line and surface maintenance costs in addition to savings on tie life.

WHEN

You start saving as soon as you start using Bird Self-Sealing Tie Pads. Bird's is the original self-sealing tie pad . . . proven by years of in-track service. Write for further information, today . . . Bird Tie Pads, Dept. HTS-6, East Walpole, Massachusetts.

BUY THE BEST



BUY BIRD

Quality Trackwork

A black and white photograph of a railroad track. The track runs diagonally from the bottom left towards the top right. It consists of two parallel steel rails on wooden ties, with gravel ballast between them. On the left side of the track, there is a signal light with a white lens and a dark housing. The background is dark and out of focus, showing more tracks and structures.

U N I T E D S T A T E S S T E E L

by U.S. Steel

● This main line turnout on the Union Railroad is located at the Duquesne, Pa., yards. It includes the following quality Trackwork products, manufactured by U. S. Steel:

- A 16'-6" insulated rigid split switch.
- TAYLOR Adjustable Rail Braces laterally bracing the stock rails.
- A USS No. 140M parallel-throw Switch Stand.
- A Rail Bound Manganese Steel Frog, with guard rails placed opposite.

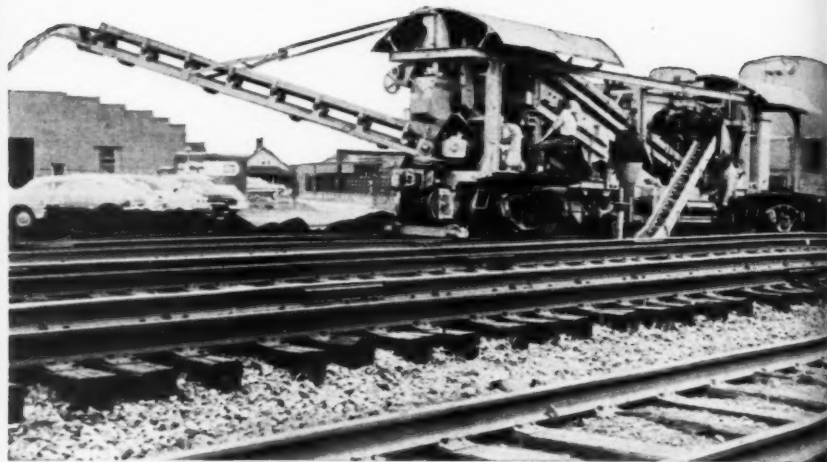
USS Quality Trackwork products possess an inherent strength and hardness that gives them longer life and results in greatly reduced maintenance. The extra care and effort that goes into the manufacture of joint bars, tie plates, switches, frogs and special track layouts makes USS Trackwork the finest you can buy. Specify USS Quality Trackwork for all your requirements. Write to United States Steel Corporation, 525 William Penn Place, Room 5250, Pittsburgh 30, Pa., for data on any of the above products or assistance in design from our engineers.



TRACKWORK

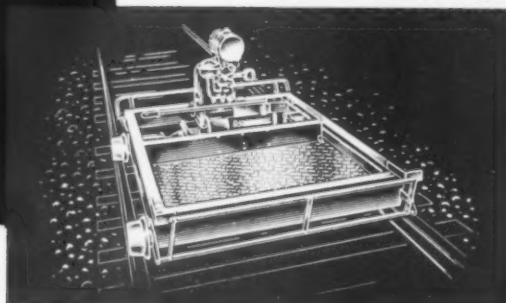
SEE The United States Steel Hour. It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.

BALLAST CLEANER CLEANS ALL BALLAST IN ONE OPERATION

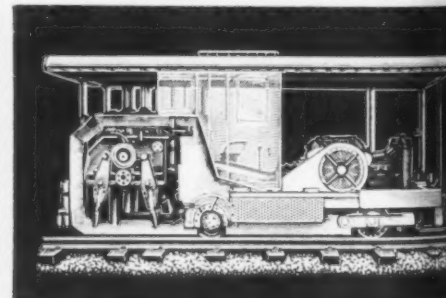


- Cleans Cribs, Shoulders, Intertrack Space and Under the Ties
- Provides Roadbed Resilience
- Increases Life of Good Drainage
- SAVES Ballast Money
- LOWERS TRACKS:
In Tunnels
Under Overhead Bridges
Between Grade Crossings
From Bridge to Bridge

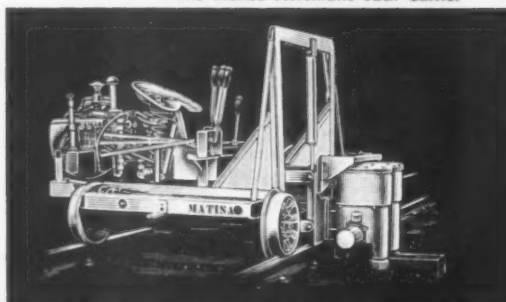
OTHER MATISA TRACK MAINTENANCE MACHINES



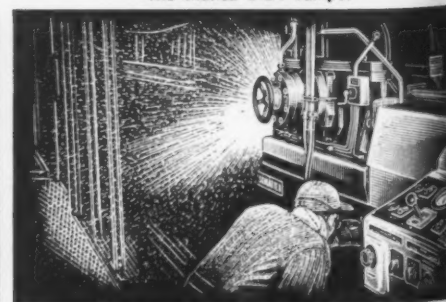
The Matisa Automatic Jack Carrier



The Matisa B-24 Tamper



The Matisa Tie Renewal Machine



The Matisa Electric Flash Rail Welder

For detailed information on the Matisa Ballast Cleaner see page 175 of the 8th edition of the Railway Track & Structures Cyclo-pedia—or send for literature on this or other Matisa machines.

Matisa

EQUIPMENT CORPORATION

1020 WASHINGTON AVE. • CHICAGO HEIGHTS, ILLINOIS

News Notes

... a resumé of current events throughout the railroad world

RAILWAY

TRACK and STRUCTURES

JUNE, 1956

Carloadings for first 17 weeks of 1956 totaled 11,949,486. This was an increase of 875,923 compared with the same period last year, according to a summary compiled by the Car Service Division of the AAR.

Electronic devices for detecting hot boxes on passing trains at speeds up to 60 mph are to be installed by the Rock Island at Mineral, Ill. The installation includes two cameras, one on each side of the track, and a heat-sensitive element that measures and evaluates the heat radiation from a journal.

The five per cent increase in railroad passenger fares is expected to yield an additional \$27 million annually to eastern and western railroads. The increases were approved by the Interstate Commerce Commission in a report made public April 30, the eve of the effective date of the tariffs.

A traveler is able to get instant train and fare information direct from the New York Central's information bureau through a special telephone installed on the main floor of Chicago's LaSalle Street station. The telephone service is in addition to the information desk located on the station's second floor.

Atomic power would be more useful as a source of generating electricity for railroad shops than it would for supplying power for a locomotive, according to J. P. Kiley, president of the Milwaukee. Whether it can be used successfully for motive power will probably depend upon economics and a means of protecting the public from the dangers of radiation, he added.

Travel on regularly scheduled domestic air lines in 1955 was more than 14 times as hazardous as travel by rail. The railroad's fatality rate was 0.67 passengers killed per billion passenger-miles and the air line's rate was 9.49 according to the Interstate Commerce Commission's Bureau of Transport Economics and Statistics.

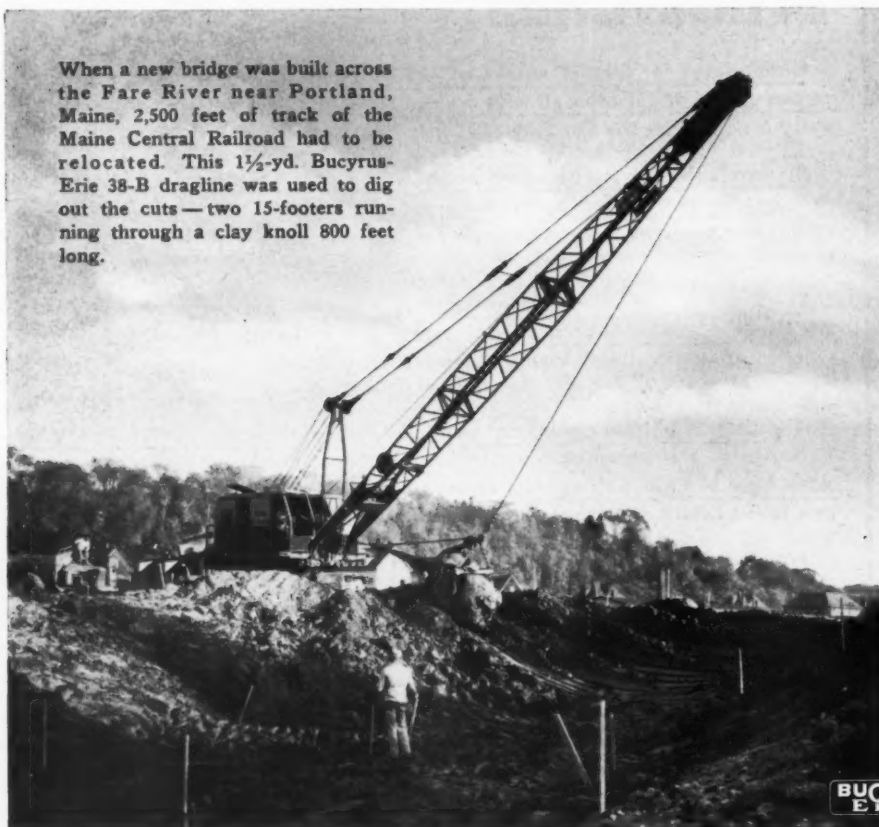
Class I railroads in March had an estimated net income of \$70 million, compared with \$78 million for the same month last year. Because the January-February net was down \$5 million from that of the same period in 1955, the net for this year's first quarter was off \$13 million—\$163 million compared with \$176 million last year.

One of the world's longest movable spans will be constructed by the Baltimore & Ohio and the Army Corps of Engineers across Arthur Kill between Elizabeth, N. J., and Staten Island, N. Y., at a cost of \$10.9 million. The new bridge's lift span will normally be held in its raised position because water-traffic movements occur more frequently than trains.

Benefit payments by the Railroad Retirement Board are rising according to the board's annual report. On the basis of anticipated needs, the current 12.5 per cent tax rate, together with interest earnings on investments, will eventually fall \$86 million short of the benefit requirements. The net cost of the railroad retirement system as it now exists is 14.13 per cent of the taxable payroll, or 1.6 per cent above the current tax rate.

The House Interstate Commerce subcommittee, which is considering proposed legislation to implement recommendations of President Eisenhower's Cabinet Committee on Transportation Policy, was told that the "law of the jungle" rules the transport field today, when 75 per cent of truck operators and 90 per cent of water carriers are unregulated. The statement was part of a presentation made for the Federation for Railway Progress by its chairman, James G. Lyne, who is also editor of Railway Age.

CHANGE FRONT ENDS FAST— WITHOUT CHANGING EFFICIENCY



When a new bridge was built across the Fare River near Portland, Maine, 2,500 feet of track of the Maine Central Railroad had to be relocated. This 1½-yd. Bucyrus-Erie 38-B dragline was used to dig out the cuts—two 15-footers running through a clay knoll 800 feet long.

**BUCYRUS
ERIE**

A Bucyrus-Erie 38-B is more than just a shovel with some alternate front ends. It's a machine that's designed to deliver the same smooth control, the same big-output operation, and the same over-all efficient performance with any front end. Use it as a shovel, dragshovel, crane, clamshell or dragline, and you'll find that jobs get done fast, costs are kept low.

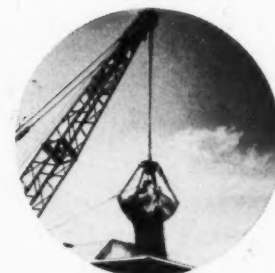
Still another advantage of the 38-B is its quick convertibility that saves time, lets you start working on the job quickly. No changes in major main machinery are necessary. Butt splices make it easy to add or interchange crane boom inserts, and jibs can be added without dismantling boom point machinery.

This kind of Individual Design — design that matches every machine component to the rated capacity of the 38-B — is an extra measure of value that will help your maintenance-of-way crews handle more jobs at low costs. See your Bucyrus-Erie distributor soon for the complete details on the 38-B and for other Bucyrus-Erie machines from ¾ to 4 cu. yd.

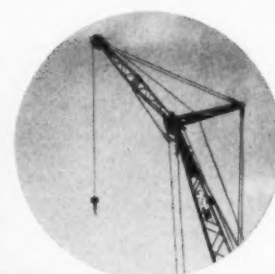
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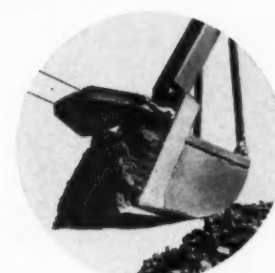
SHOVEL



CLAMSHELL



CRANE



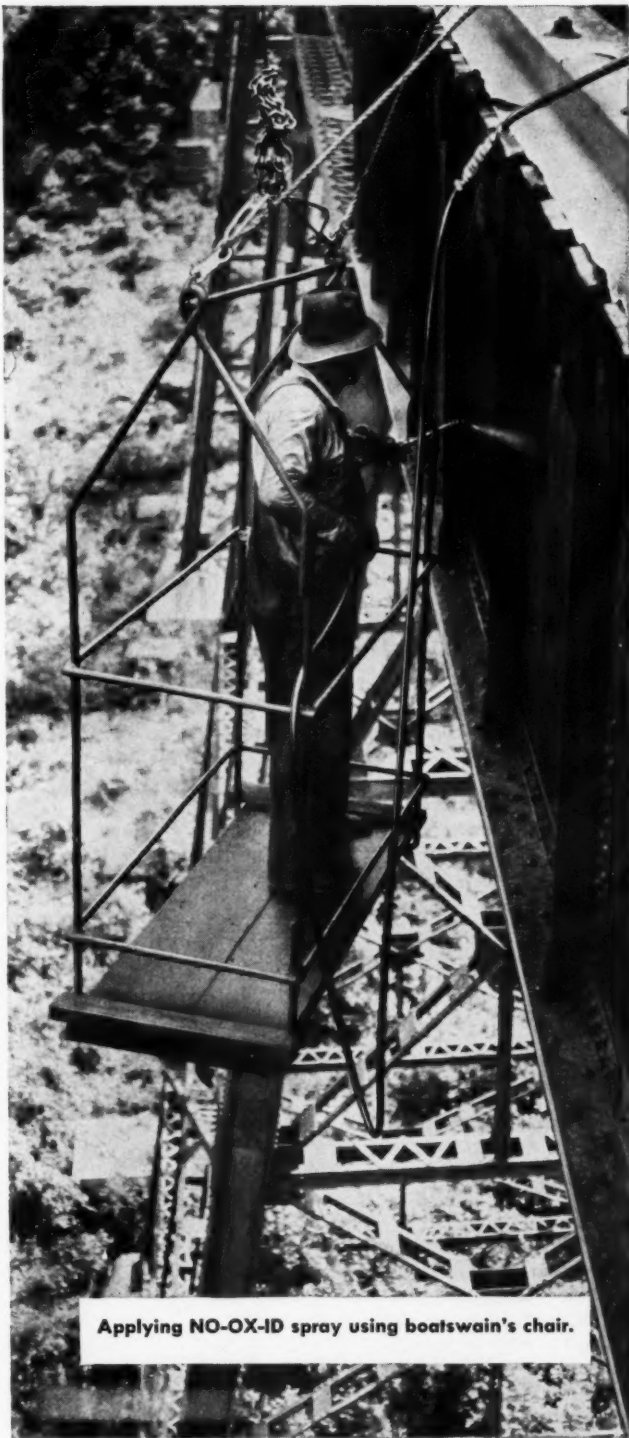
DRAGSHOVEL



DRAGLINE

BUCYRUS-ERIE COMPANY

South Milwaukee, Wisconsin

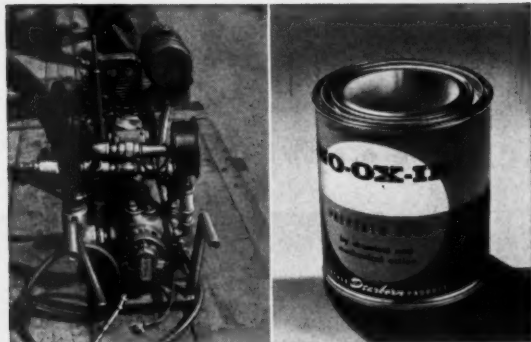


Applying NO-OX-ID spray using boatswain's chair.

FOR LONG TERM PROTECTION

Dearborn. NO-OX-ID

NO-OX-ID SPRAY METHOD SAVES MONEY ON BRIDGE PROTECTION FOR MANY MAJOR RAILROADS...



On-the-job spray equipment delivers NO-OX-ID direct from drum to sprayer. There is a NO-OX-ID consistency for every bridge spraying job.

Costly, time-consuming bridge painting programs are rapidly being replaced by the NO-OX-ID Spray Method. Procedure is simple. (1) Remove dirt and loose rust. (2) Spray steel surface with one coat of NO-OX-ID. Result: effective, economical, long-term protection.

REASONS FOR THE SWING TO NO-OX-ID

- Labor costs reduced...fewer bridge gangs needed
- Less scaffolding required
- Reduced steel preparation time
- One coat gives long-term protection

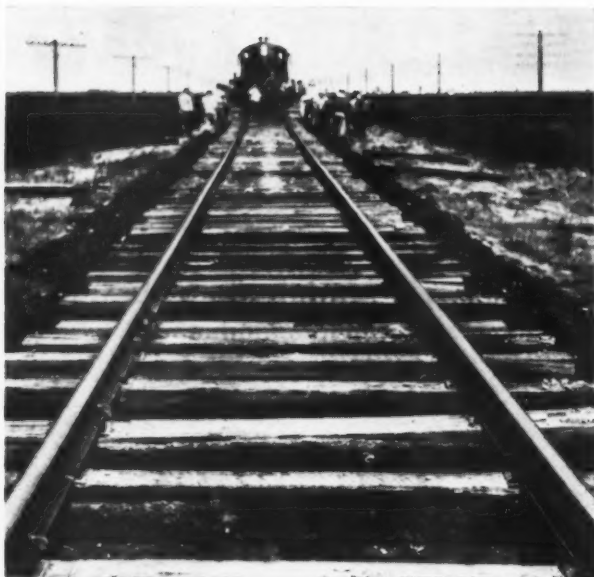
Dearborn has served railroads since 1887 with NO-OX-ID rust preventives, water treatment, cleaners and detergents.

Dearborn Chemical Company
Merchandise Mart Plaza, Dept. RTS
Chicago 54, Ill.



Please send me full information on the NO-OX-ID Bridge Spraying Method.

Name.....Title.....
Railroad.....
Address.....
City.....Zone.....State.....



CRIB TRACK 3 TIMES FASTER

...with a proven sled-plow team!



EXISTING BALLAST UTILIZED for initial raise. Pulled along beneath track, *Ballast Sled* skeletonizes, redistributes crib material, gives a 3½ in. raise.



FOULED BALLAST REMOVED. One pass of *Ballast Plow* under track deposits fouled crib material on shoulders. Track, now skeletonized, settles on original bed.

Skeletonizing . . . raising . . . renewing ballast and ties . . . every phase of rehabilitation is done faster and cheaper with this job-proven Mannix Sled/Plow team. **Faster** because the sled or plow work the direct method — underneath the track — redistributing or clearing ballast as they skeletonize. **Cheaper** because they do their work in one-third the time required by hand labor. Cost of renting this equipment and utilizing the service of a Mannix-trained sled engineer is more than offset by the time and cost savings effected. Write, phone, or wire for detailed information — and show a clear profit on your current track rehabilitation program.

MANNIX INTERNATIONAL INC.

1154 Northwestern Bank Building, Minneapolis 2, Minn. Phone: FEderal 9-7709

LIVE-BOOM DERRICK RISES TO THE OCCASION

This 5700 Series Holan derrick literally rises to the job at hand. In a matter of seconds, smooth hydraulic power brings the derrick from out-of-the-way overhead storage into working position.

The derrick lifts poles 55 feet long, has an infinite number of lifting positions and gives live-boom action even with a single-drum winch. Its capacity: 6000 pounds . . . 2000 pounds for loading into the truck body.

To keep the derrick rigid, you can specify pin locking or Holan's exclusive hydraulic sleeve locking . . . completely automatic coupling of the side legs. Write for catalog on Series 5700 Power Derrick.



PIN-LOCK TYPE

Unique pin arrangement requires established sequence for locking the derrick. You can't pull out the wrong pin.



SLEEVE-LOCK TYPE

Operator pushes control lever and sleeve slides upward to lock derrick. Stop pins prevent the sleeve from accidentally disengaging.



J.H. HOLAN CORPORATION

11 4100 WEST 150TH STREET
CLEVELAND 11, OHIO

OTHER PLANTS:

HOLAN CORPORATION OF GEORGIA, Griffin, Ga. • J. H. HOLAN CORP., Phoenix Div., Arizona

BRANTFORD-HOLAN LIMITED, Brantford, Ontario

THE NAME THAT MEANS WORK SIMPLIFICATION

Line construction bodies for light to heavy-duty. Crew compartments optional. Efficient tool compartments and drawers.



Aerial arm for spotting workmen 37 feet above ground, 9 feet below ground level. Rotates 360°.



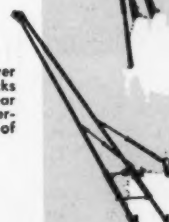
Service bodies for chassis up to 1½ ton. Lengths, 72", 73", 84", 90", and 102".



Hydraulic derricks designed for front or rear mounting. Capacities to 12,000 lbs.



Light-duty power operated derricks for front or rear mounting. Operating range of 146°.



Ladders to 40' with all phases completely hydraulic. Pump actuated by P.T.O. or separate engine drive with electric starter.



Mechanical ladders expertly engineered and counterbalanced for effortless handling. Maximum heights from 23' to 40'. Swings 360°; angles to 72°.



Portable hydraulic and mechanical earth borers. Augers for 8" to 20" diameters, depth to 8'.



Wide variety of pole and reel trailers. Standard and special. Many optional features.



Hydraulic jacks, controlled from rear of truck. Rigid mounted or patented Holan self-stowing types.



Hydraulic towers with rotary, stationary, or transverse platforms. Exclusive box-girder telescoping mast.

- Erecting new structures
- Widening underpasses
- Replacing old piles

Armco Pipe Piles help solve railroad bridge problems



ABOVE: Work is shown in progress on the lengthening of a Baltimore & Ohio Railroad bridge across U. S. 25. Armco Pipe Piles, 12¾-inches in diameter, .188-inch wall thickness, will support a structural steel span across the widened highway. On-track driving equipment did not interrupt daily traffic of 18-20 trains.



LEFT: In Milwaukee, the Chicago & North Western Railroad recently re-constructed the approach to a main-line bridge where traffic could not be re-routed. It was done by driving Armco Pipe Piles in three-pile clusters on each side of the bridge and connecting them with cross girders. Driving was done from a barge.



ABOVE: In the Southern Pacific Lines' new Englewood Yard in Houston, Texas, Armco Pipe Piles are used as bents to support the new Hunting Bayou retarder bridge. Bottoms of the piles are encased in corrugated metal pipe filled with concrete.



LEFT: This 160-foot-long Southern Railway System bridge near Golden Gate, Illinois, is supported by Armco Piling, 18 inches in diameter, .250-inch wall thickness. Sixty-foot sections had an end closure of 1-inch flat plate, cross-braced inside the pile. Foundation piers present a minimum resistance to stream flow, have few structural members to pile up debris.



ARMCO

Steel Pipe Piling

An increasing number of the country's major railroads are finding Armco Pipe Piles an efficient and economical aid in building new structures and repairing or replacing old trestles.

DRIVING: With Armco Pipe Piles, each blow is transmitted to the pile end with minimum loss of force, and piles drive straight and true. Work can often be done without interrupting traffic.

MAINTENANCE: Armco Pipe Pile Bents won't warp, crack, rot or burn. They offer less obstruction to stream flow and reduce danger of flood damage.

PROOF: Evidence of the performance of Armco Pile Bents is in A.R.E.A. Bulletin 516, a report on tests of concrete-filled pipe pile piers for a railroad bridge. The pile bents were Armco Piling.

SIZES: Armco Piles are supplied in 132 combinations of diameters and wall thicknesses, making it easy to select the exact pile you need for your job. Write us for more data. Armco Drainage & Metal Products, Inc., Welded Pipe Sales Division, 4416 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.



RACINE

Hydra-Quad **TAMPER**

(Patent Pending)

Just one man operates this four-tool ballast tamper

Here's a completely hydraulic machine that tamps more track per man per day . . . and does it more uniformly. One operator controls the vertical movement and lateral position of four tampers through two finger-tip hydraulic valves. *Each tamping gun acts independently to insure full compactness of ballast at all points.* All four tamping guns automatically tilt to carry ballast under the tie at proper depth. To accommodate crooked ties, the operator simply swivels the main head.

The Hydra-Quad tamper is easy to adjust for varying rail heights and wider-than-average ties. Each

gun is equipped with a quick-change tamping bar holder.

Drop-down and outboard wheels insure easy removal from track. Hydraulic cylinder raises and pivots the machine. Power winch assists in rerailling. Movement from tie to tie is powered by a fluid motor that also operates the power winch.

One more flexibility feature: Off-center outrigger mounting permits two men to operate machines on opposite rails to tamp both tie ends simultaneously. Send for free folder and specifications. Address **RACINE HYDRAULICS & MACHINERY, INC.,** 2038 Albert St., Racine, Wisconsin.

Lease or time purchase plans are available.

RACINE



HYDRAULICS & MACHINERY, INC., RACINE, WISCONSIN

TRACK *and* STRUCTURES

Subject:

**Dear
Readers:**

You and Indispensability

A remark heard all too frequently these days is that no man is indispensable. There is no point, of course, in arguing that the statement isn't true, because it is—if we interpret it literally. The world goes on pretty much as before even when people in top-notch positions are suddenly removed from the scene.

But let's not accept this literal interpretation, and then drop the matter. Because then we are registering the thought in our minds that the individual is of no consequence. To accept this thought is to do ourselves—and every individual—a disservice because it tends to create a "what's-the-use" attitude. Regardless of how big an organization may be every individual working for it can make his own unique contribution to its welfare, and in so doing will fill a niche that will become a gap when he passes out of the picture.

The tendency for the individual to lose his identity in the bigness of modern enterprise was discussed in a recent speech by Crawford H. Greenewalt, president of E. I. du Pont de Nemours & Co. He was talking particularly about what he referred to as the "uncommon" man—the one who is gifted with unusual creative powers. But what he said can, in our opinion, be applied also to the so-called average individual because we all have our particular gifts that can be stifled or developed depending on circumstances and on our own attitude.

"... Behind every advance of the human race," said Mr. Greenewalt, "is a germ of creation growing in the mind of some lone individual, an individual whose dreams awaken him at night while others lie contentedly asleep. We need those dreams, for today's dreams represent tomorrow's realities. Yet, in the very nature of our mass effort, there lies this grave danger"—that the individual "will be conformed and shaped to the general pattern, with the loss of his unique original contributions . . . The great problem, the great question, is to develop within the framework of the group the creative genius of the individual. It is a problem for management, for public education, for government, for the church, for the press—for everyone."

The fact that this is a problem for management and government does not mean that the individual is helpless to do anything about the matter himself. The large institutions we have today—particularly corporations and labor unions—create an atmosphere in which people find it easy to lose their individuality. It is something like being caught in quicksand; there is danger of being pulled under and submerged in the great mass of people around us. We have to be aware of this danger and to fight against it if we wish to achieve any degree of indispensability.

Persons in supervisory positions in maintenance-of-way work are fortunate in this respect. By having attained such positions they have already demonstrated they are "uncommon" men. By bringing into play such creative abilities as they may possess they can impart something of themselves to prevailing techniques and procedures. When they have passed on, the world won't stop but it will never be quite the same as it was before they put their mark on it.

MHD

Preparing
right-of-way
the modern way



WITH NEW, IMPROVED D8s



General Construction Co., Vancouver, put its two new CAT* D8 Tractors to work building a 19-mile section of railroad in the clay gumbo and silt of the British Columbia wilderness. They were used for clearing, building 18-foot roadway and push-loading big, efficient DW21 Tractors and Scrapers.

The contractor reports he is particularly pleased with the oil clutches and the longer tracks of the D8s. The oil clutch on the new D8 (Series E) greatly increases work life of the machines since a constant oil bath lubrication reduces wear on all moving parts. Very little maintenance or external lubrication is required.

And the track roller frames now have *seven* rollers improving flotation and control of 'dozing. In addition, track shoes are hardened by a "water-quench" process to increase life of grousers and other wearing surfaces.

The powerful new D8 (you have a choice of oil clutch or torque converter) has been designed from the ground up for a long, productive life on difficult railroad jobs.

There now is 191 HP in its new engine, which also features a new fuel injection system, new governor, new fuel filter, new water pump, new oil cooler and new larger radiator. There is a constant power drive for power controls, in-seat starting and convenient controls with hydraulic booster.

The new D8 has created a new concept of "a day's work." It will increase your production, lower your costs. Call your Caterpillar Dealer today. Ask him for a demonstration—on *your* job.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

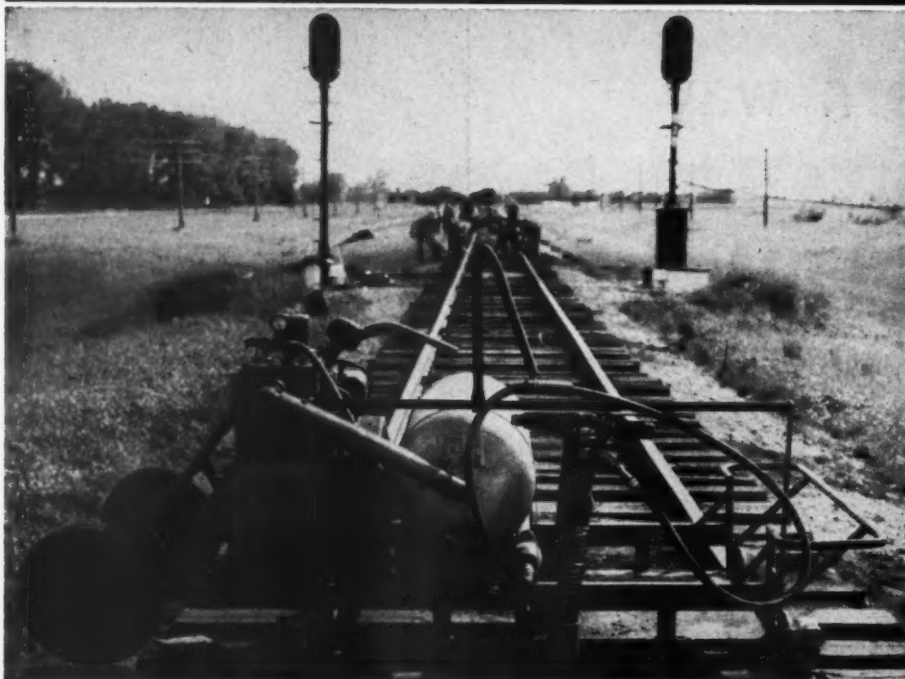
CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**NAME THE DATE...
YOUR DEALER
WILL DEMONSTRATE**

WOOLERY

PNEUMATIC ... SPIKE DRIVER



MEDIUM WEIGHT HARD HITTING

Designed primarily for use by the renewal gangs. Various other pneumatic tools can also be operated with it when not being used for spike driving.

Brakes are automatically applied to 2 of the 4 hanged wheels to hold the magazine in place when spikes are being driven.

When pressure is applied to the push handle the brakes are automatically released and the entire unit rolls easily on roller bearings.

Two lever operated pneumatic-tired set-off wheels permit removing the unit from the track in less than a minute by two men.

COMPRESSOR: 5 C.F.M. Duplex Cylinder

ENGINE: Wisconsin Twin Cylinder, 13 H.P.

DRIVE: Multiple V-Belt

HAMMER: THOR 60-pound

TANK: A.S.W.E. Standard with Safety Valve

FRAME: All steel, welded

TRACK WHEELS: 6-inch roller bearing

SET-OFF WHEELS: 8" x 4.00 pneumatic-tired, roller bearing

BRAKE: Two-wheel, automatic applied

WEIGHT: 760 pounds

WOOLERY MACHINE COMPANY

29th and Como Ave. S.E.
Minneapolis 14, Minn.
Pioneer Manufacturers of Railway
Maintenance Equipment

ELIMINATE costly road surface MAINTENANCE!

INCREASE the LIFE of Bridge Floors over Railroad Passings!

KLEMP HEXTEEL
STEEL FLOOR ARMOR for
Resurfacing Wood Decking

HEXTEEL heavy duty steel floor armor creates a steel surfaced floor capable of withstanding maximum moving loads. Easily installed with mastic composition or asphalt fill for resurfacing wood decking. Prolongs the life of bridge floors.

Klemp Hexteel
Installation over
UNION PACIFIC
Right of Way near
Omaha, Nebraska

KLEMP METAL GRATING CORPORATION

6601 South Melvina Avenue • Chicago 38, Illinois • PORTSMOUTH 7-6760

Send us data on your bridge floor and load conditions today!
We will reply with estimate for your job.

KLEMP METAL GRATING CORPORATION
6601 South Melvina Avenue, Chicago 38, Ill.

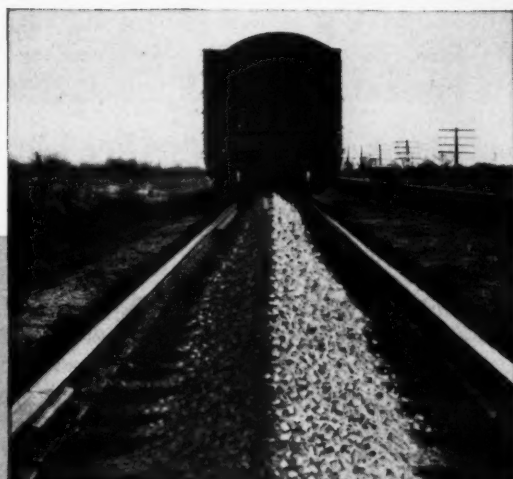
Gentlemen:
Kindly send me a copy of your "Data and Specification Manual."

Name _____
Firm _____
Address _____
City _____ Zone _____ State _____
Phone _____

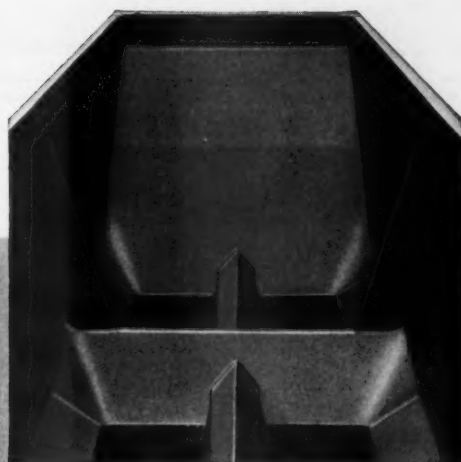


ENTERPRISE

Patented Ballast Cars



Ballasting with
Center Doors Only



Ballasting with
Side Doors Only



ENTERPRISE RAILWAY EQUIPMENT COMPANY

59 E. Van Buren Street • Chicago 5, Illinois

"FLUSH" WITHOUT COUNTERSINKING

Lewis sealbite car bolts



Bolt available
with Loktite
Nut No. 2 or
std. sq. (shown)
and hexagon
nuts.

"Wood engineered" for a smooth
level-with-the-surface moisture
tight seal without counter-
sinking . . . Sealbite fins bear
against wood on a radial
plane to prevent turning when
nuts are set. Available in
Hot-Dip Galvanized finish
for "Long Life Economy,"
in black for low first
cost. Call, write or
wire for sample prices.



Cross section of head from
above, showing fins,
bevel and shank.

All products are manufactured in the U.S.A. to A.S.T.M. specifications.

Lewis

BOLT & NUT COMPANY
504 Malcolm Ave. S. E.
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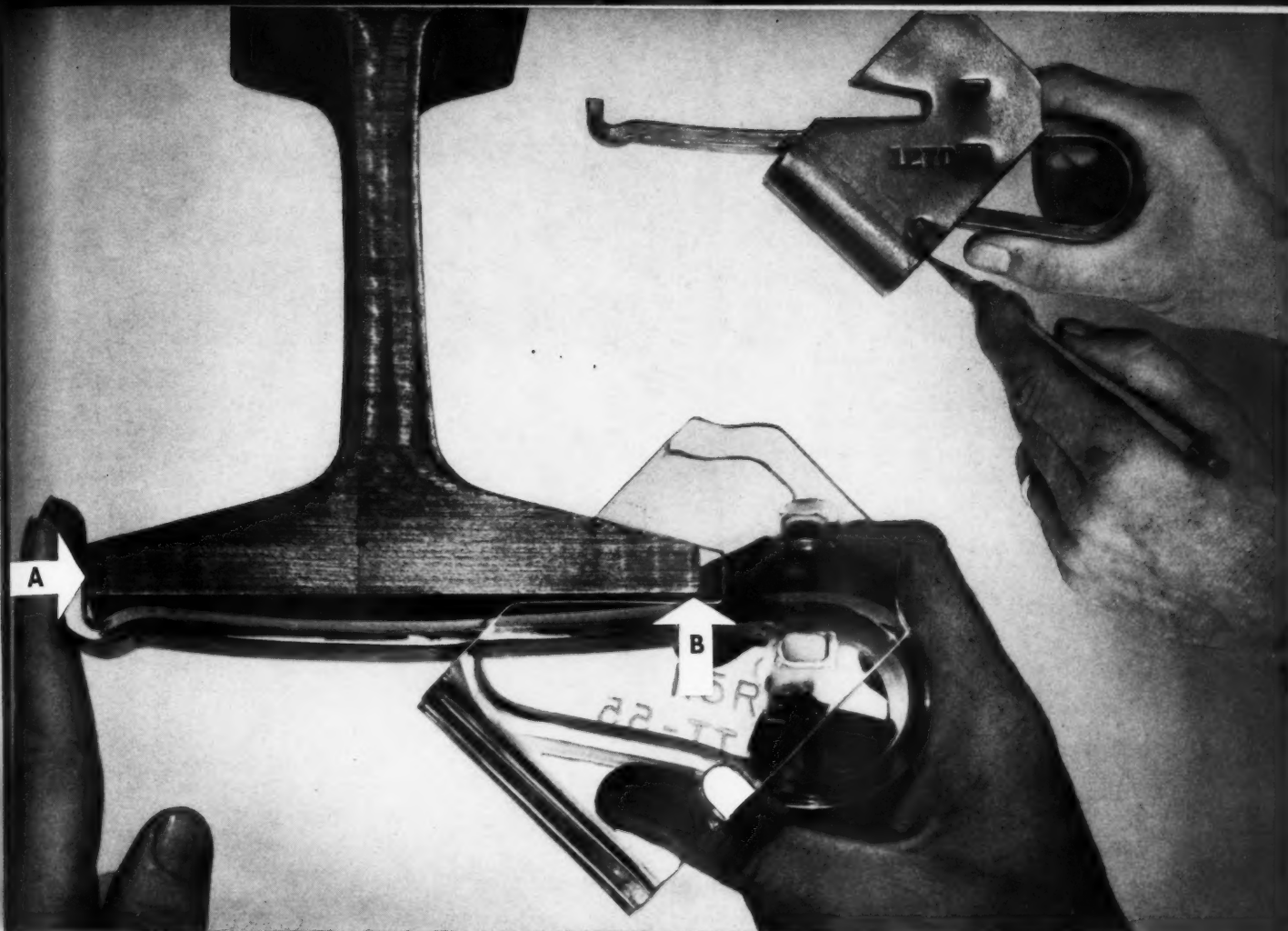
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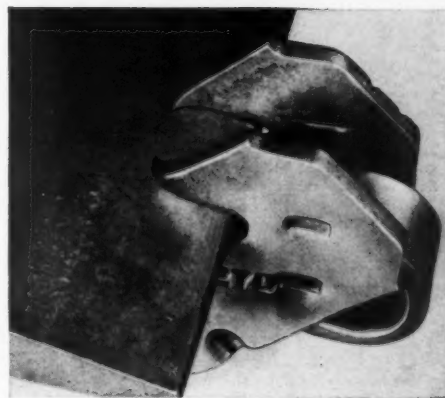
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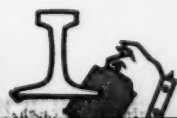
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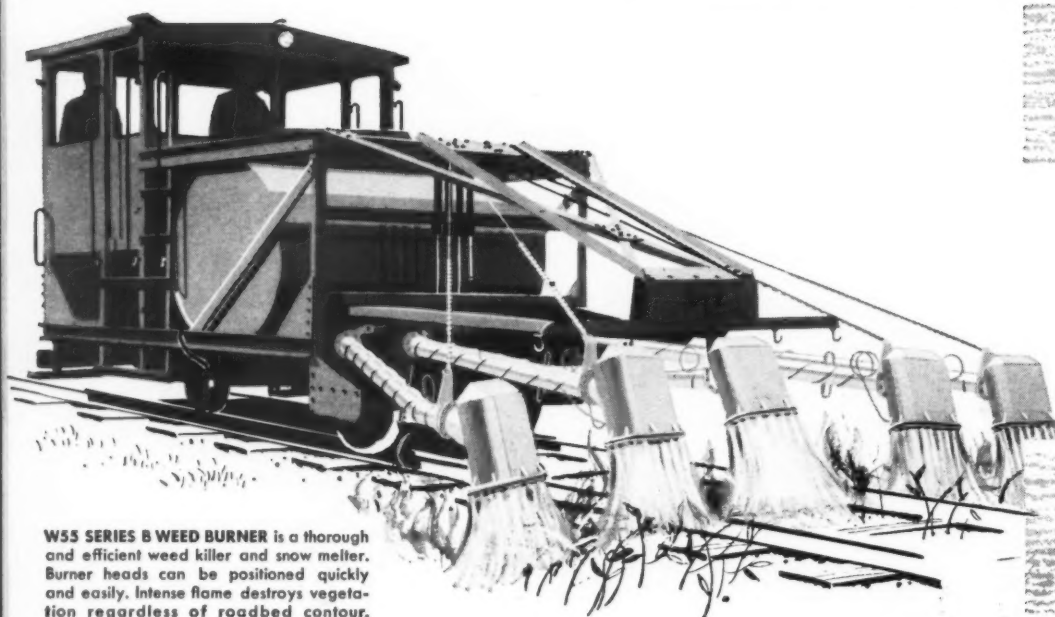
BULLDOG RAIL ANCHOR



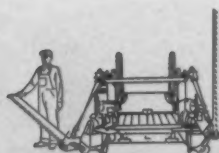
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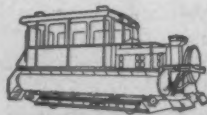
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Fairmont



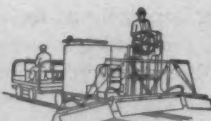
W55 SERIES B WEED BURNER is a thorough and efficient weed killer and snow melter. Burner heads can be positioned quickly and easily. Intense flame destroys vegetation regardless of roadbed contour.



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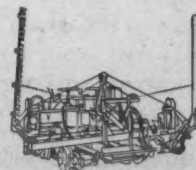
W66 SERIES B WEED SPRAYER is a self-propelled unit fitted with two sets of differently sized nozzles which may be used together or separately. Minimum crew. Features three-speed, two-way drive with fluid coupling.



W78 SERIES A WEED SPRAYER is a trailer type unit which applies liquid weed killers. Light weight, compact, low cost. Two-cylinder engine, 800-gallon tank and 11-nozzle spraying. Efficiently designed and soundly built.



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RAILWAY TRACK and STRUCTURES

RAILWAY

TRACK and STRUCTURES

JUNE, 1956

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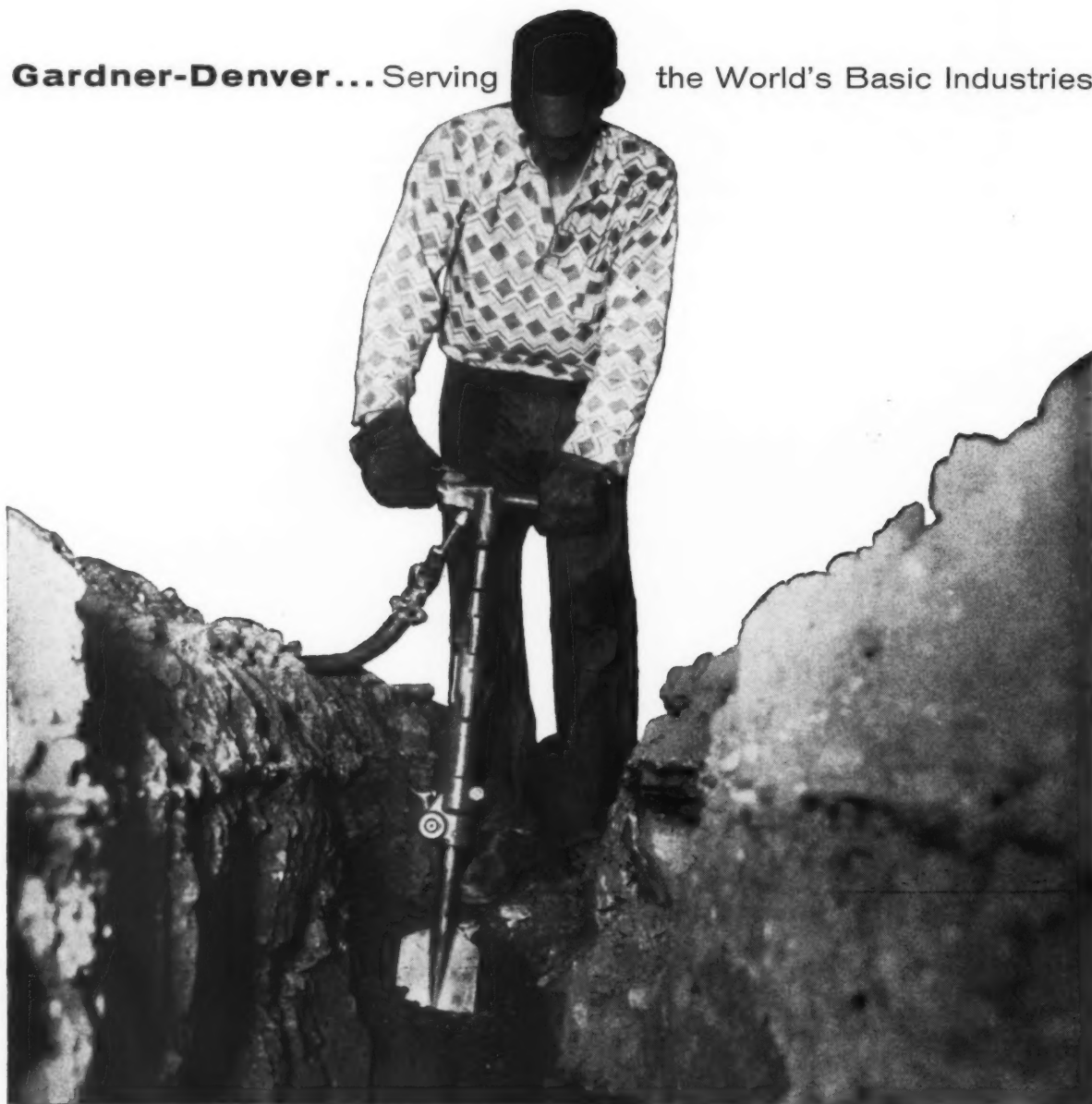
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TRACK *and* STRUCTURES

Editorial Opinion

How to Give Foremen a Lift

The extensive changes that have been made in the maintenance-of-way organizations of most roads in recent years have brought problems in adjustment and adaptation to many supervisory employees. As a group, track foremen have probably been more deeply affected by these changes than any other single class of supervisory personnel.

On nearly every road the working conditions and responsibilities of the track-foremen group have been affected in one way or another. Most foremen have had their territories lengthened. Some of them have fewer men in their gangs; others have more. Many foremen who formerly had gangs of six men or less now find themselves in charge of crews ranging up to 30 men or more.

It is to the everlasting credit of track foremen as a group that they have adapted themselves so well to the new conditions. And that's not merely an editorial opinion. It's the substance of many statements made

in recent months by maintenance-of-way officers in private conversations.

Thus, maintenance-of-way officers as a whole cannot be criticized for not being appreciative of how their foremen have adapted themselves to the new conditions. If any criticism is in order it would more likely be on the basis that some of these top officers have perhaps failed to show their appreciation.

This can be done in various ways. A brief note or word about some job that has been done particularly well will accomplish wonders in bolstering a foreman's morale. Or the expression may take a more tangible form. For example, a top maintenance officer recently sent some of his foremen copies of a book he thought they would find helpful.

Most supervisors will probably agree that we have a good point here. Mere agreement, however, isn't enough; unless the idea is put to use we might as well never have mentioned it at all.

On Conducting a Staff Meeting

Mutual understanding between management, supervision and employee is essential to the operation of a successful business organization. Staff meetings or conferences, as we recently pointed out on this page, are one means of achieving this end.

However, the mere holding of a staff meeting is, by itself, insufficient. Such a meeting must have a predetermined plan and capable direction to accomplish its purpose.

An article, "How to Run a Conference," which appeared in a recent issue of *Railway Age* (April 30, 1956) explains in simple, direct language the essentials of an effective meeting. Conferences, according to the author, usually serve one of three purposes:

(1) To develop from the group the best ideas, plans and procedures.

(2) To instruct and drill each member of the group for acceptance and skill in using standard practices.

(3) To influence attitudes beneficial to the organization and mold character by broadening the group's understanding.

A meeting designed to serve one of these purposes has a predetermined plan. For capable direction it is necessary that the chairman have an understanding of his job, that is, how to start the meeting, guide the discussion and stop the proceedings when the purpose has been served. "That," points out the author, "sounds fairly easy. Actually it can be, provided the chairman knows (1) the purpose of the conference; (2) certain skills and techniques of handling conferences; and (3) the members sufficiently well."

To make the most of the meetings they hold, every maintenance-of-way supervisory officer, from chief engineer to foreman, should have a pretty good idea of how to conduct a conference.



THIS SIGN protects the maintenance gang from trains within its working limits. To pass this point . . .



. . . **THE ENGINEER** uses his radio to call the foreman for authority to go through gang.



ENGINEER'S CALL is heard on radio mounted on track machine. Operator calls the foreman who . . .

What Radio on M/W Equipment Is

When this road mounted dual-frequency receivers and transmitters on the larger track machines used by system maintenance gangs, it virtually eliminated train stops at working limits and also effected better gang efficiency and economy.

● "It's one of the best things they ever gave me," said Bill Hurles, foreman of the DT&I's surfacing gang, when discussing the radio and walkie-talkie sets assigned to him. Asked how they helped him, he stated first that they save him miles of walking and much time each day in transmitting instructions to his men. Also, he said, in addition to preventing delays to trains, radio permits him to obtain more production time for his gang and better coordination of its activities. Downtime of the work equipment is also reduced, he said.

The surfacing gang is one of three system M/W gangs on the

Detroit, Toledo & Ironton which have been furnished with radio-communication equipment. The other two are the rail-laying and tie renewal gangs. The radio equipment used includes both the Federal transit-call and the Bendix automobile-type units, each consisting of a transmitter, control box and receiver operating from the 6 or 12-volt dc-battery of the work equipment, and walkie-talkie packsets. They all operate on a dual frequency of 161.43 and 161.61 megacycles. The first is termed Channel "A" for point-to-train or gang-to-train communication, and the second is termed Channel "B" for end-

to-end or intra-gang communication.

The primary reason for the use of radio on the M/W work equipment is to expedite the movement of trains over the road by the elimination of train stops due to the working of the system gangs and to reduce the delays to mechanized maintenance gangs when clearing for trains. The installation of two-way radio sets on the M/W work equipment actually supplements a radio system* recently installed for controlling the movement of trains by the dispatcher. At present, the DT&I has eight wayside offices (see map) equipped with radio, each of which is remotely controlled by the dispatcher at Dearborn, Mich. Each station may also be locally controlled. Through these stations the dispatcher can contact all road trains and switchers, which are

*This system was described in *Railway Age*, April 2, 1956, p. 48.

machines helps reduce train delays and loss of working time



... ANSWERS over truck radio. When machines are in clear, he tells train to proceed.



RESUME SPEED signs are placed at end of restricted-speed territory whenever slow boards are used.

Doing for the DT&I

radio-equipped. Conversely, the train conductors, who ride in the trailing units of the two-unit locomotives, can contact the wayside stations and the dispatcher.

Radio Sets on Trucks Too

The system rail gang has a two-way radio installation on the Burro crane and another installed on the van-type truck assigned to this gang. The system tie gang has sets installed on three large track machines, i.e., the tie machine, the ballast regulator and the power tamper, and also on the van-type and pick-up trucks assigned to it. The system surfacing gang has sets installed on the power tamper, ballast regulator and on the van-type trucks assigned to it. In addition, each of these gangs has three walkie-talkie packsets which are used by the foremen and assistant foremen and as standby units. The radio sets

have an effective range of from 10 to 25 miles, depending upon the terrain and other interferences, and the walkie-talkies a range up to 5 miles.

Setting Work Limits

Under present operating rules of the DT&I, the three system maintenance gangs are protected from 7:30 am until 4:01 pm each working day by "19" train orders which designate the mile post location within which the gang is working, the name of the foreman in charge and whether or not slow boards will be used to indicate a speed restriction on the track being worked, the information for this order is given to the dispatcher each afternoon for the next day's work. This gives the dispatcher sufficient notice in which to issue "19" orders for the next day's trains. Each morning the foreman of each gang will again contact



RADIO on M/W units supplements radio system for controlling train movements.



BALLAST REGULATOR works over a wide range of track and radio assists in coordinating its work with the other units of the gang.



FOREMAN'S packset permits him to keep in contact with machines at all times.

Radio For Track Machines . . .

the dispatcher and secure a train line-up from him so the number of trains and their approximate arrival time will be known. Ordinarily, a working-limit goal of three miles is observed, one mile for occupancy by the gang and one mile on each side for use as an approach.

At each of the beginning ends of these working limits the foreman will have a red octagonal sign placed adjacent to the track on the engineer's side. The sign reads "STOP SYSTEM GANG," and trains or engines by general order instructions are not permitted to pass this sign between the times specified on the train order without receiving proper permission from the gang foreman. When it is necessary for the speed of trains or engines to be reduced below normal speed, due to track or other conditions, while moving through the limits of the gang stop signs, standard yellow "SLOW" boards and green "RESUME SPEED" signs are used by the trackmen to mark the territory where the speed is restricted.

How Radio Is Used

When an approaching train is about 20 miles from a gang's working limits, the engineer will call the gang foreman on the "A" channel of the radio and the call will be heard over the loudspeakers of the

sets mounted on the track machines. These equipment sets are always tuned into the "A" channel unless they are being used for intra-gang communication, in which case the "B" band will be used until the end of the conversation, after which the set will be turned back to the "A" band by pushing a button on the control box.

If the foreman of the gang is within hearing distance of the equipment radio, he will answer, giving his name and location. If he is not within hearing distance of the loudspeakers of any of the machines, the operator of one of the units will call the foreman, who will go to one of the track machines and answer the train's call.

The engineer will tell the foreman where the train is at that moment and about how many minutes will elapse before it reaches the gang's working limits. Ordinarily, this radio contact is made sufficiently in advance of the actual arrival of the train to permit the larger track machines to be run to a siding, and the smaller machines to be set off the track. The assistant foreman usually accompanies the equipment and, when it is in the clear, he calls the foreman on the "B" band, the foreman receiving the call on his packset to give him this information. Then, as soon as the remainder of the gang has the track in condition for traffic, the

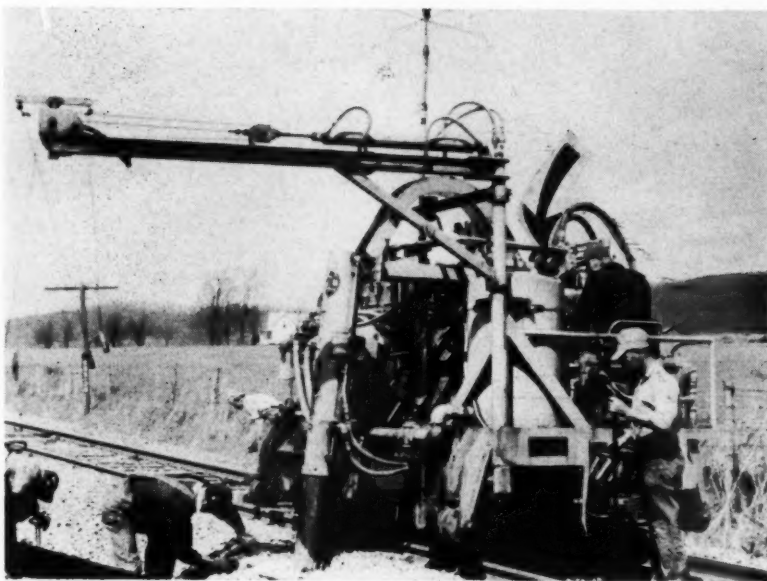
foreman contacts the train, which by then is within range of the foreman's packset, and gives the engineer permission to pass the system gang stop sign and move through the work limits.

If the engineer of an approaching train is unable to contact the foreman designated on the train order, the train is brought to a stop before it reaches the "STOP SYSTEM GANG" sign, and the engineer sends a trainman ahead on foot to establish contact with the gang. The train cannot proceed until authority to do so has been obtained from the foreman in charge. Also, while a train is passing through the working limits, the train and engine crew must be on the alert for hand signals and obstructions.

Extra Sets Are Safeguards

Since only one radio mounted on a work-equipment unit is required to contact a train this question may be asked: Why not equip only one machine with radio and the others with the packsets? There are several reasons for having more than one work unit equipped with radio. The track machines are subject to severe vibrations which sometimes interfere with the use of the radio sets. Hence, by having a set on more than one track machine, the probability that radio communication will fail completely, is reduced materially.

Also, there are occasions when one work unit may be working some



TIE MACHINE has a loudspeaker (arrow) so calls over the radio can be heard above the noise of the operation.

distance from the remainder of the gang and since they have radio equipment the foreman can contact them to instruct them to clear up for a train or move to another location.

More Uses Found Daily

Because the installation of radio on the M/W equipment is relatively recent, new uses for it are being found daily. For example, in one instance, the mechanic's pick-up truck had gone to the camp to pick up the box lunches for the gang. Meanwhile, one of the track machines broke down and the mechanic found that a spare part was needed to place the unit in running condition. He immediately used the radio to contact the driver of the truck, who picked up the spare part at the camp and brought it back with him. Thus, the machine was repaired while the gang was eating lunch and without the delay that would have occurred while the truck made a second trip to camp.

The radios have also proved useful while moving the camp trailers, there are two such outfits which consist of about five house trailers each. Both the van and pick-up trucks assigned to the gangs are equipped with radio and have hitches for hauling the trailers. If the camp move is a short one, the two trucks will move the trailers. But, if the camp move is for a considerable distance, the trucks assigned to the section forces will be com-

mandeered from the three nearest sections to assist in making the move. These trucks are not radio-equipped but they do have trailer hitches. To avoid blocking traffic, the trucks are spaced from 400 to 500 ft apart when moving over the highway in a convoy so as to give other highway vehicles room to

pass. Since the head and rear trucks of such a convoy are about one-quarter of a mile apart, there is a possibility that the vehicles would get separated if one of them developed trouble and had to stop. By putting the gang's radio-equipped trucks at the head and rear of the convoy, the vehicles are kept together and can assist one another in the event of difficulty.

Another important reason for the use of radio on M/W equipment is to permit these machines to be moved from one job location to another under their own power while under train orders, thus saving the time and expense of loading and unloading this equipment. The smaller machines are coupled to the larger radio-equipped units and are hauled to the next job location. The radios on these units enable the dispatcher, to follow the progressive movement of the outfits at all times.

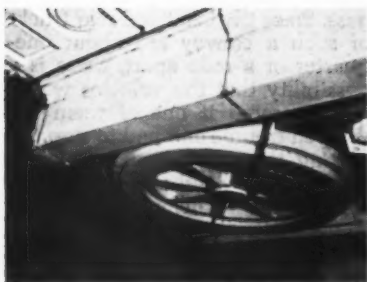
The DT&I's experience to date has convinced the road that the use of radio on M/W equipment results in substantial economies. It increases gang-production time, reduces down time of equipment, produces better work coordination, and reduces waste of available man-hours. But, most important, it results in good meets between trains and gangs and, reduces delays to trains due to M/W work.

Safety Thought of the Month



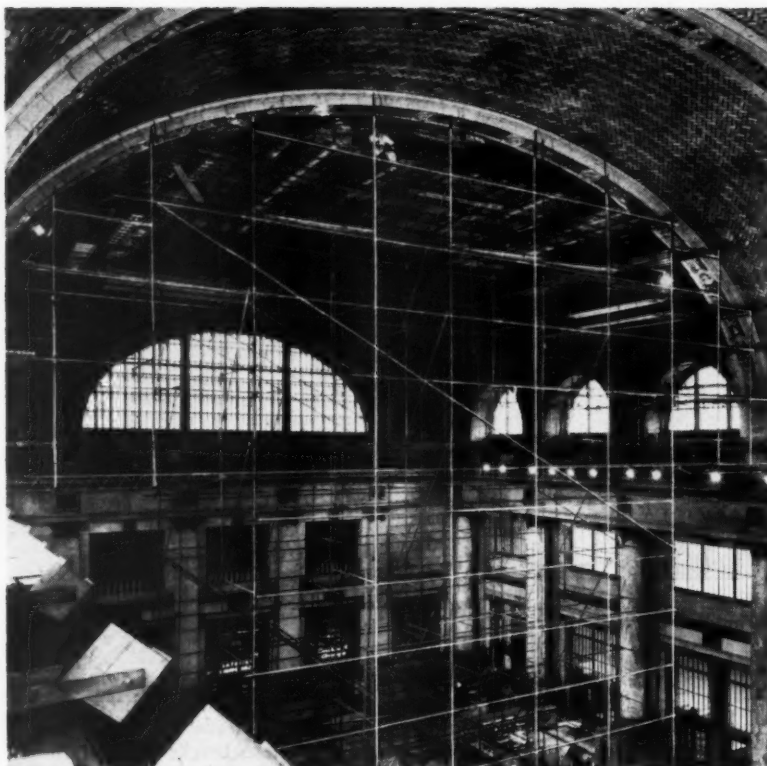
(Photo courtesy Burlington Lines safety department)

LOOK both directions before crossing tracks. Train movements can be expected any time on any track in either direction. If way is clear, step over—not on—the ball of the rail.



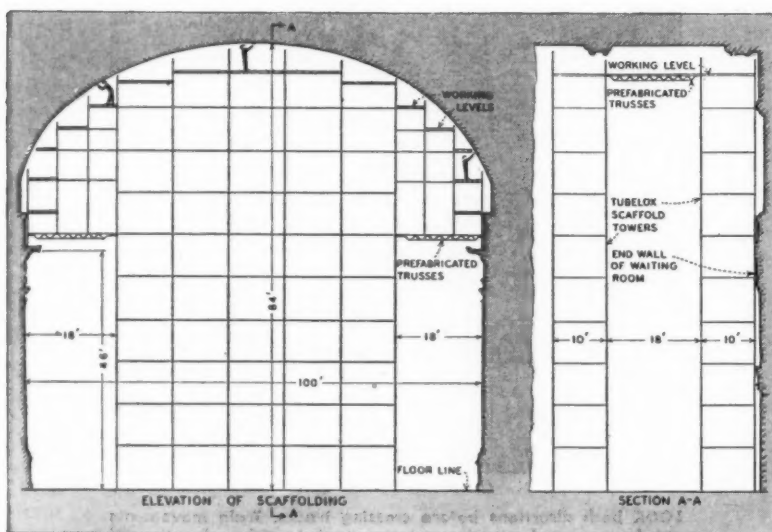
CONTRAST between washed and unwashed portions can be seen in this close-up of details of the terra-cotta arches.

Long-hidden decorative patterns in terra cotta and tile are revealed in C&NW's passenger terminal in Chicago. Half an acre of barrel-arched ceiling, 84 ft above floor, is washed with the aid of portable scaffolding and an unusual method of supplying water and disposing of the waste.



WORKING PLATFORMS, supported by scaffolds, give access to ceiling.

Station Cleaning Job Shows . . .



SCAFFOLDING was erected, as indicated by these diagrammatic sketches, in form of two parallel towers. Each tower was successively dismantled and re-erected ahead of the other as work progressed from one end of the waiting room.

● Forty-five years of accumulated soot and grime provide a dingy contrast with recently completed new construction. Such a contrast developed on the North Western when a program of modernization in the Chicago passenger station began to take shape. Thereupon the railroad embarked on a difficult cleaning project of unusual magnitude. The result has been to uncover unsuspected beauty which, combined with that of the new construction, has given an entirely new aspect to the interior.

This monumental structure of Italian Renaissance architecture was completed in 1911. The ticket offices and baggage room were located on the ground floor. Broad staircases connected this level with the second-floor track level. On the upper level are a cavernous waiting room 200 ft long by 100 ft wide with a barrel-vaulted ceiling extending 84 ft above the waiting



BEFORE

In these views you see the waiting-room ceiling from end to end through the lens of a "Panon" wide-angle camera

(Photos by Edward DeLuga, Chicago Daily News)

SOOT AND GRIME, the accumulation of 45 years, give the barrel-arched ceiling a dark and dingy aspect.

AFTER



FULL BEAUTY of the cameo-like terra-cotta arches and tile ceiling is revealed, with long-missing color restored.

... There's Beauty Under That Grime

room floor, and an adjacent two-story train-gate concourse 316 ft long by 60 ft wide.

For several years the road has been carrying forward an improvement program aimed at consolidating all passenger facilities on the waiting-room level. The objective is to promote the convenience and comfort of the 90,000 through and commuter passengers using the terminal daily. The improvements will, in addition, release the ground floor for rental to concessionaires or lease for other commercial purposes. The relocation of the ticket offices and baggage room has been completed and a double moving stairway has been installed to replace a stairway leading from the street level to the concourse.

The problem of cleaning the walls and ceilings of the waiting room and concourse was one that had often been considered and as often had been postponed. How-

ever, the striking contrast created between the new construction and the existing surroundings triggered the decision to carry out the cleaning program so that the entire interior would be compatible. Studies were made to determine the most economical procedure. The investigation included fixed portable scaffolding, movable or rolling scaffolding and, in the case of the ceiling of the waiting room, suspended scaffolding.

Two types of scaffolding were selected. A rolling type, mounted on casters, was chosen for cleaning the side walls of the waiting room up to the impost of the arched ceilings, and the side walls and flat ceiling of the concourse. For cleaning the arched ceiling a portable fixed-type scaffold was selected which could be dismantled and moved ahead in sections as the work progressed the length of the waiting room.

Two contracts were let for fur-

nishing the scaffolding. The first, with Chicago Safway Scaffolds, Division of Safway Steel Products, Inc., was for the rolling scaffold. As erected this type was in the form of a block "U" in plan and was formed of patented Safway "A" frames and cross bracing. It was supported on twelve 6-in casters equipped with brakes which locked both the wheel and the swivel when the scaffolding was in place. The "U"-shaped feature permitted the scaffolding to straddle the columns which project into the waiting room from the walls and a series of large floor-mounted brass cluster lights (since removed) which were centered in the wall panels between the columns.

The second contract, with The Patent Scaffolding Company, Inc., was for the portable fixed-type scaffolding used for washing the ceiling. The contractor furnished, erected and moved all material and



RESTORED INTERIOR of waiting room blends with new construction of the modern ticket office which is visible at the right.

provided all of the necessary staging. The purpose of this scaffolding was to provide platforms from which workmen could reach all parts of the arched ceiling. At the top was a platform about 50 ft wide from which the central part of the ceiling was washed. On each side there were platforms at five levels following the contour of the arch.

The scaffolding consisted of Tubelox pipe sections erected in the form of two parallel towers placed transversely in the waiting room and spaced 18 ft apart. The towers were 10 ft wide and 5 panels (about 50 ft) long, and reached to within 18 ft of the side walls. Prefabricated trusses spanned between the tops of the towers and provided intermediate support for the upper working level. Similar trusses extended between the ends of the towers and a ledge at the base of the ceiling arch.

The working levels along each side of the arch were provided by erecting scaffolding supported by the prefabricated trusses that spanned the 18 ft between the towers and the sidewalls. To help carry the greater load imposed by the increased scaffold height at the outer one-third points of the trusses additional support was provided by a steel cable attached to the ceiling arch. Holes formed in the arches during their original construction provided access to structural members above the ceiling to which these supporting cables were attached.

When the work was started the scaffolding was erected with one tower against the east end wall of the waiting room. While this end wall above the tops of the columns

and the first 28 ft of the ceiling were being washed, the scaffolding contractor erected another half section of tower adjacent to one end of the outer of the two towers. This half tower was spaced 18 ft longitudinally from the existing tower and was braced at the top and one side as previously described. When the first 28 ft of ceiling had been completed the tower and intermediate braces adjacent to the end wall were dismantled, one-half at a time. The first half to be dismantled was re-erected to join up with the half tower previously erected, and the remainder served as a new half tower ahead. By continuing this process, the scaffolding was progressively moved ahead from one end of the waiting room to the other as the work progressed.

How Surfaces Were Cleaned

Washing of the side walls in the waiting room started on September 28, 1955, and washing of the ceiling started on February 27, 1956. The cleaning work was completed on April 17. About a ton of C&H No. 44 cleaning compound was used. Washing was done by hand using sponges or cloths. Water and chemicals for washing the side walls were raised and the waste water was lowered by hand line.

Water supply and waste disposal for the ceiling-washing operation presented a more difficult problem. This was solved by installing an air-operated Fairbanks, Morse 2½-in by 2½-in by 2-in reciprocating pump in the men's washroom on the fourth floor of the depot. The air supply for operating the pump was reduced from 100 to 60 psi from an

available supply line. Water from the pump was piped to the washing levels through a ½-in rubber hose equipped with a valve at the outlet end. As water was required, opening of this valve automatically started the pump by reduction of pressure in the hose line, and closing of the valve stopped the pump when full static pressure in the line was built up.

Waste water and dirt were placed in a 10-gal drum set on the staging. A 1½-in fire hose attached to the bottom of the drum led down the scaffolding to the floor level. There the hose was connected to a 55-gal drum placed on its side on a four-wheel hand truck. Whenever the 55-gal drum became filled, an attendant on the floor signaled the men on the washing level that he was going to disconnect the discharge hose. The truck was then wheeled out to the track area where the drum was emptied through a spigot mounted in the drumhead. Cleaning compound and other necessary supplies were raised to the working levels with the aid of a hand line running over a sheave attached to the ceiling.

In order to permit full use of the station facilities during the washing operation, canvas drop cloths were attached to the first stage of horizontal tie rods on the scaffold towers, about 10 ft above the floor, as a protection for patrons.

Four men from the terminal janitor forces, under the direction of the terminal custodian, washed the walls and ceiling in the waiting room and the walls in the concourse. Three of the men did the actual washing while the fourth served as attendant on the floor level. Bridge and building forces washed and painted the ceiling of the concourse and the window frames in the end walls of the waiting room. The entire ceiling area was inspected by the engineering department for defects and was found to be in excellent condition.

Completion of the wash job disclosed architectural decorations long hidden under the heavy coating of soot and grime. In the case of the ceiling these decorations included eight white terra-cotta arches decorated cameo style with conventionalized patterns of railroad tools and equipment against a recessed dark-green background. The area between the arches was covered with buff-colored tile laid in mortar in a basket-weave pattern. Restoration of the original color imparted a warmth long absent from the previously dark interior of the waiting room.



CLASS of trainees receiving instruction from supervisor of work equipment and motor car inspector.

Machine Operators' School . . .

- Starts with instruction in the classroom, and
- Ends with training and qualification in field

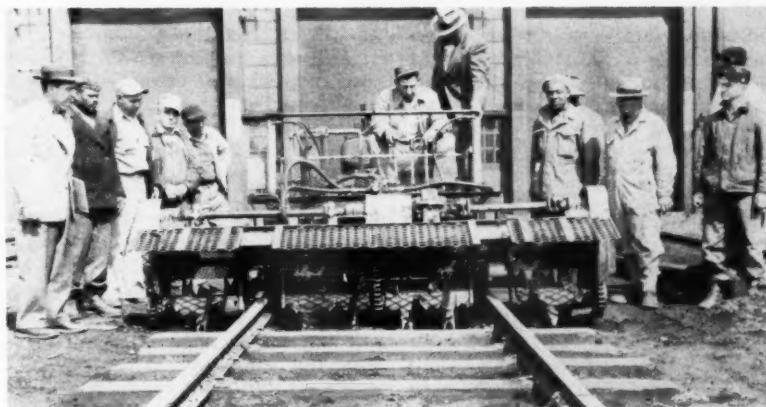
By Samuel E. Haines, Jr.*

• Operators of maintenance of way machines on the Reading have an excellent *esprit de corps* and are proud of the work they do. One operator even bought wax to polish his machine so it would look nice and stay clean. With men such as these it is no wonder the Reading is proud of its machine operators.

How Class Is Started

Much of the credit for this situation must be ascribed to the formal program for training operators that has recently been placed in effect. The instruction begins indoors and the classroom procedure is arranged in such a way as to put the men at ease. First the instructor welcomes the men to the course and outlines the purpose of the instruction. While he is making his introductory remarks, a sheet of paper is passed around on which

* Until recently Mr. Haines was supervisor maintenance and work equipment of the Reading. He has now been appointed port facilities engineer.



TRAINEE gets pointers on operation of Fairmont tieded scarifier. Class looks on.

the men sign their names. This serves the purpose of making a list of those attending and also indicates who can write.

In his opening remarks, the instructor stresses the fact that the course provides an opportunity for each man to better himself by becoming qualified on many machines. It is also pointed out that an operator has a great deal of

responsibility and that in mechanized gangs the operators set the pace; their performance determines whether the operation will be successful or otherwise. The class is also impressed with the fact that any machine can derail a train if improperly used.

Following the preliminaries the different machines are taken up one by one. First the starting of the

School for Machine Operators...

machine is described and discussed. Then the power train is described and studied until each man, starting with the motor, can list all the mechanical parts and features down to the working point. For example, the operator of a Railroad Crane should describe the power train thus: motor, torque converter, engine clutch, chain case, center pin, drive shaft, spline shaft, universal joint, vertical shaft on propulsion car, rear axle, lower drive shaft on propulsion car, front axle and wheels. When he is able to point out the parts in the power train, he knows what he is operating and why he has to take good care of it. Because he knows thoroughly how the machine works, he knows why he has to lubricate it and keep the working parts clean.

Take Written Examinations

The men often seem to understand instructions but fail to answer questions correctly at the end of the course. For this reason it is necessary to test their knowledge at the end of the instruction period. For this purpose a set of questions and answers has been made up for each machine. During the classes the answers to the questions are included in the instruction, and at the end of the course the men are asked to fill in the answers. If the answers are satisfactory the men are passed. A typical list of questions is shown in an adjoining column.

The school is aimed at training the men in the fundamentals of the equipment and getting them used to the machines. They learn how and why the machines work. They learn the importance of taking care of their equipment and how to take care of it. They are well on their way to becoming operators but their official qualification comes about in the field when they actually demonstrate their ability to run the machine satisfactorily. A supervisor then makes a written report to the effect that he has qualified the man on the specific machine as of that date. The report is sent to the division engineer who keeps a record of the men qualified.

According to present practice,



STUDENT OPERATORS hard at work filling out their examination papers.

any man going through the school is paid a laborer's rate while attending class. This rate continues until he is qualified in the field.

How Men Are Selected

This is the first year that the training of machine operators has been placed on a formal basis and some difficulties have been encountered. Division engineers were asked to send in lists of men who wished to become machine operators. Naturally, nearly every man wished to learn every machine, and when the men were canvassed to determine those interested in taking the training course, the list was far too long. A tentative selection was made on the basis of seniority and ability. It is important that sound judgment be used in selecting men for school as those who cannot read or write, men who are careless, or who have a poor attitude will not make good machine operators.

Men who cannot read or write will not be able to follow instruction manuals or fill out their inspection reports. Men who are careless will not take care of their machines and may injure their fellow workmen. Men who have a poor attitude will not listen to the instruction and will disobey orders later on. Machine operators often must work by themselves and therefore have to be reliable and of sound judgment.

Limited to 12 Men

It was found that classes should be limited to a maximum of 12 men so that each man can get individual instruction when he needs

help. One trainee started a bulldozer, lost control of the machine, and rammed it into a pole. Naturally he was disqualified because it was apparent he was afraid of the machine and did not know what to do in an emergency.

After the prospective machine operator has become familiar with the machine and is running it smoothly, the instructor yells at him in order to note his reaction. If the man loses his head under these conditions, he will certainly lose his head out on the railroad, where lives may be at stake. After each man has put the machine through its paces, he is asked by the instructor how he feels. Various normal reactions are noted. Some say they are scared. Some say they like the machine. Some give up and admit that they really don't want to be machine operators. The time to find this out is during the training period.

From Section Man to Operator

A recent example of the effectiveness of the training program happened on a grading job. Due to a shortage of bulldozer operators it was necessary to have a man travel 25 miles from his headquarters to the job. This was expensive and wasted a great deal of time. So a man from a local section gang was sent to the school.

This man had never operated a machine before. But when questioned by the supervisor in the field in order to pass his final qualification, he stated that when he first comes to the machine in the morning, he is to check it over generally. Next he is to check the water in the radiator, the battery

A Typical Written Examination

For qualification as operators of Koehring Railaid cranes, trainees are required to answer these questions at end of course of instruction:

1. What do you do when you first come to the machine?
2. What powers this machine?
3. Is engine water-cooled?
4. What steps are to be taken in starting the main engine?
5. Describe power train from main engine to hoist drum.
6. Describe power train from main engine to front wheels.
7. Describe power train from main engine to carbody turntable gear.
8. Describe power train from drive chain to hoist drum.
9. List all clutches.
10. List all brakes.
11. How do you check the torque converter belt for slipping?
12. Do you start engine at full speed immediately? Why?
13. How do you know when to change oil, grease, and generally lubricate the crane?
14. How often do you check grease in wheels?
15. Do you have copy of Standard Instructions W-50?
16. Have you signed "Machine Operator's Instructions 1 Cranes"?
17. Describe procedure in placing crane on propulsion car.
18. In taking crane off car, procedure is reversed. Which way is boom headed in coming off car?
19. Are weekly condition reports submitted on this machine?

water, the hydraulic oil, the gasoline in the starting motor, the diesel fuel for the main engine, and the oil in the crankcase. He was weak on the description of the power train and was told to restudy it. He was thoroughly familiar with the various levers and could run the machine fairly well, but naturally would need practice to handle it like an expert.

One of the most notable qualities the man showed was his good attitude and his appreciation of the machine. He was also asked what machines could derail a train if used improperly. He gave the proper answer, stating that any machine could derail a train if used improperly and that machine operators thus have added responsibility.

Why Teach Power Trains

At first it might seem unnecessary for operators to be familiar with the power trains of their machines. However, when they do know the functioning of the various parts in sequence they are able to spot the sources of trouble during breakdowns, and to describe them to the repair shop by telephone so that the proper part may be sent to the machine to restore it to service. Nothing is more exasperating than to have an operator at a distant point say that his machine is broken down due to a broken crankshaft and then find that all it needs is new spark plugs.

Operators are now instructed to talk to the repair shop direct by phone and not relay messages through others. Often the machine operator in talking to the shop mechanic finds out that his machine

is merely out of adjustment and he can fix it himself. At least he can make a series of tests and give the mechanic a good idea of where the trouble is.

Machine operators are responsible for their machines and if they let an engine run out of oil they are brought in for a hearing and are permanently barred from operating machines.

Most of the machines in use on the Reading are of the very latest design, as the company policy is not to retain outmoded machines. Many of the machines are less than three years old, and almost all of the older machines have been sold or scrapped.

TRAINEES are getting instruction here in operation of Nordberg ballast-cleaning equipment.



Why the Training Program Was Started

During the winter of 1955, the Reading ordered many new machines. Delivery of this equipment started in the spring and continued through the summer. As each new machine was delivered, the supervisor of work equipment and the track supervisor would team up and train the operators. Frequently the manufacturer would send a representative who would also help. In this way the mechanized tie gangs, the tamper gangs, the ballast-cleaning gangs, trenching-machine outfits, off-track ditching units, cribbing outfits, and construction gangs were trained and worked throughout the summer.

In making up the 1956 maintenance-of-way program, it became apparent there would be a shortage of operators, since the mechanical tie gangs and other outfits would be

working in different areas than 1955. The Reading does not have system-wide seniority for machine operators, and men sometimes prefer to work near home than travel greater distances and obtain more pay. The three seniority districts make it impossible for men to follow machines out of their districts even if they wish to do so. Also, in view of the three-weeks vacation problem it is necessary to have plenty of trained operators on hand so that mechanized gangs will not be slowed up or stopped when critical men go on vacation.

To provide the number of qualified machine operators required by this combination of conditions it was decided to set up an operator training school to function during the winter.



TWO-TRACK section of old approach spans had to be removed to make way for the second of the twin spans. Note walkway along side of old bridge to permit workers access to bridge piers.



TWIN-SPAN vertical lift bridge over Harlem river was constructed without interference with traffic. Old bridge (at left) can now be dismantled and removed completing the project.

Oxygen Cutting Gets Big Job . . .

. . . When Old Four-Track Swing Span Comes Down

Replacement of New York Central's swing bridge at New York with twin vertical-lift spans without interference with railroad traffic required dismantling of old bridge piecemeal to make way for the new.

● Construction of a recently completed \$18.5-million, twin-span lift bridge over the Harlem river had to be completed without interruption of traffic. The reason: 500 to 600 trains daily, carrying approximately 140,000 passengers in and out of New York Central's Grand Central Station in New York.

The four-track structure that was

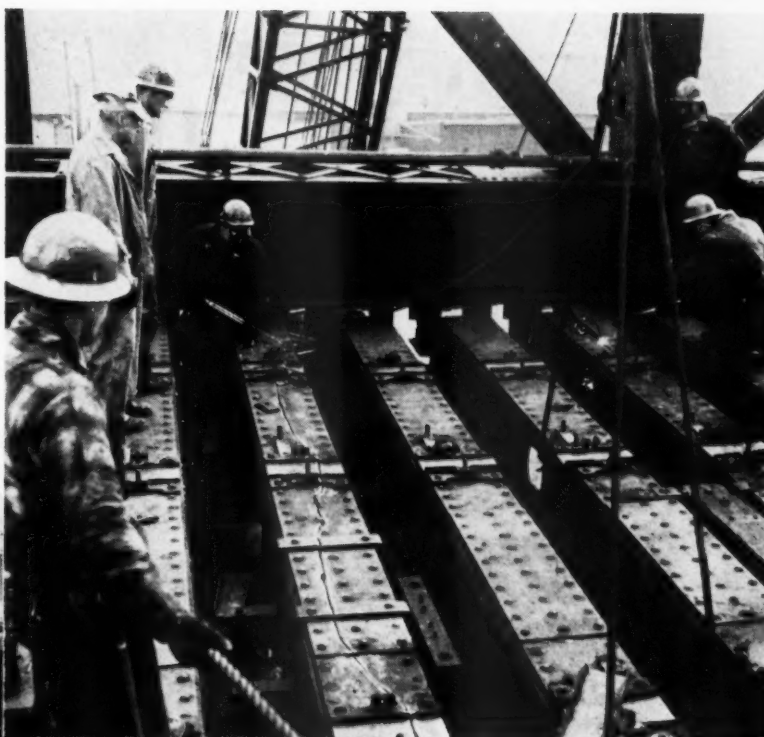
replaced was constructed before the turn of the century. The steam-driven swing span over the river had begun to suffer the mechanical ills associated with old age and could be opened in only one direction. It was necessary that a new bridge be built.

Due to the narrow right of way available because of the congestion in the area, the new structure had to be erected almost directly over the existing bridge. This was one factor which influenced the engineers when they decided to replace the old structure with a twin-span vertical-lift bridge. The first of the two-track spans of this bridge was completed and placed in service in late 1953.

The old bridge consisted of the swing span over the river, and two four-track, pin-connected, through-truss approach spans at one end of the swing span. The second of the twin spans of the new bridge had to be erected on space occupied in part by these two approach spans. To provide this space, one-half of the width of each of these approach spans was removed. The other half carried the traffic.

The design of the old approach spans lent itself to this procedure. Each of the spans consisted of three trusses, one along either side of the span and one in the center between each group of two tracks. These three trusses supported a steel-trough floor system which was

STEEL-TROUGH floor is cut into sections with oxygen cutting torches. Crane supports these sections until they are cut entirely loose from the structure.



DECK section which has been cut completely loose is lowered to the ground. Following removal of the deck, the trusses will also be dismantled.

suspended from the bottom chords of the trusses. It was necessary to remove only one of the outside trusses, along with the top lateral bracing system and floor system between that truss and the center truss. This in effect left a double-track bridge to carry the two tracks, and provided space for the construction of the second of the new twin spans.

Oxygen cutting was used to dismantle the section of the old bridge. The part to be removed was carefully cut away from the center truss and removed with the aid of cranes operating outside the bridge structure. In making the separation between the two parts of the span, a sufficient length of the floor sys-

tem to form a walkway was permitted to extend beyond the outside of the center truss. This walkway was protected with a handrail of vertical-angle supports and wire rope. When complete, it provided a construction walk for workmen which permitted them to move from pier to pier of the old structure without the necessity of walking in the live-track area of the bridge.

Following the completion of the second of the twin spans and the routing of all traffic over the new bridge, the old structure was completely removed. The work of this removal was greatly expedited by the use of oxygen cutting procedures. The necessary oxygen and

acetylene gas to serve the cutting torches was supplied from a centrally located bank of Linde cylinders manifolded together.

After the rails and track fixtures had been removed from the old bridge, sections of the steel-trough floor were cut loose and removed. This was accomplished by making a lateral cut across the bridge at every third trough, and longitudinal cuts along the trusses between these lateral cuts. This method effectively provided sections of the floor which could be handled by cranes and removed as they were cut loose. After the floor system had been dismantled, the trusses and top lateral system were removed piece by piece.

Is it possible to lay rail with tight joints and to keep them tight to get the same effect as continuous welded rail? To get the answer to this question a test installation of "frozen" joints on the Louisville & Nashville is under observation by the research staff of the Association of American Railroads, under the sponsorship of the Track committee of the American Railway Engineering Association. Results of early observations of the test section are given here.



RAIL ENDS at this "frozen" joint on L&N are barely visible.

What About "Frozen" Joints?

● "... It appears to me there are some advantages in laying rail tight with frozen joints relative to normal track." This statement was made by G. M. Magee, director of engineering research of the Association of American Railroads, during an address before a recent meeting of the Maintenance of Way Club of Chicago. Mr. Magee was discussing the results of observations he and his staff had made of a test installation of tight joints on the Louisville & Nashville.

Why Test on L&N

In laying rail tight with frozen joints, explained Mr. Magee, it was hoped that many of the advantages of continuous welded rail could be obtained without the complications of transporting and laying the long lengths of rail, with less difficulty in transposing the rail when it becomes worn on curves, and without the ultimate problem involved when the rail has served its use in main line and must be removed and relaid in secondary trackage. Because the L&N has a consider-

able mileage of curved track, the late L. L. Adams,* chief engineer, was interested in investigating the possibilities of tight rails with frozen joints, and placed a test installation in the single-track main line near Chapel Hill, south of Nashville, Tenn., in November 1953. The rail was 132 RE section and, inasmuch as it was obtained from TC&I, the ends were milled in accordance with that company's regular production practice.

With the rail ends fitting tightly together it was hoped that it would not be necessary to have the ends hardened, and it was further thought that end hardening might later develop difficulties due to uneven rate of wear. Accordingly, said Mr. Magee, the installation was made without the rail ends being hardened or beveled.

The Test Section Described

This track has an annual traffic density of about 12,000,000 gross tons, is provided with 6-hole joints and 1½-in diameter bolts. The rail

* Mr. Adams died on May 3.

was laid tight at 65 to 73 deg rail temperature, with 35,000 to 40,000 lb of bolt tension. The tight-rail installation is somewhat less than one mile in length, comprising 234 rails. At each end of the installation eight panels of normal rail had every tie anchored with conventional base-type anchors boxed in on each side of the tie. The objective of this was to isolate the tight-rail section and insure that it would not be influenced by the normal track at each end, and conversely that the normal track would not be influenced by the tight-rail installation. The tight rail installation itself was divided into three types of anchorage. For the north 94 rails of the installation, every tie had a rail clip applied on the field side. For the next 66 rails, a rail clip was provided only on alternate ties, also on the field side. For the south 74 rails, rail clips were provided, also on only alternate ties, but placed on the inside of the rail rather than on the field side.

(Additional information on the test installation was given in the report of the AREA Track commit-



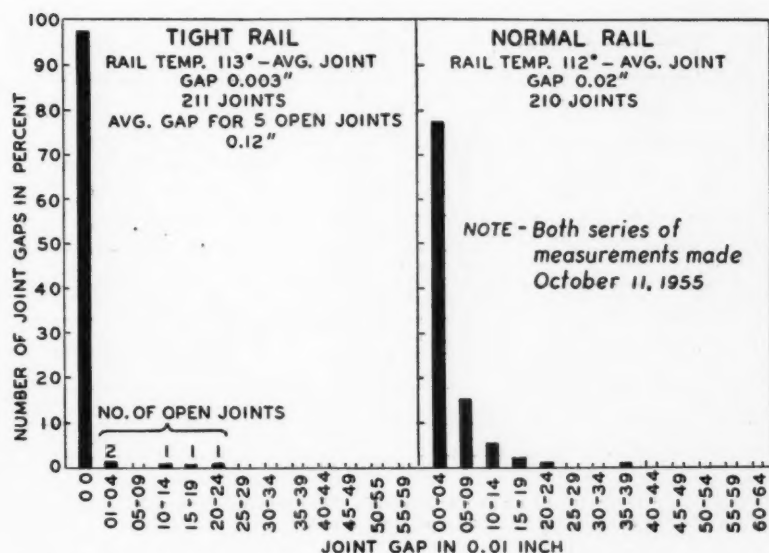
TEST SECTION of tight rail on the L&N.

tee as presented at the convention last March. Before laying the tight rail all necessary tie renewals were made and the track was given a general surfacing with slag ballast. In addition, 14-in tie plates for the new 132-lb RE rail were used to replace the tie plates under the old 100-lb rail, and one rail was gaged out to accommodate the difference in the rail sections. The rail was placed with a rail crane and the joint bars were applied loosely. When approximately 10 rails had been laid, the rails were bumped on the ends to close the gaps. The middle bolts were wrenched tight and the other bolts were tightened to a normal tension. All bolts were then retightened with a power wrench to the tension mentioned by Mr. Magee.

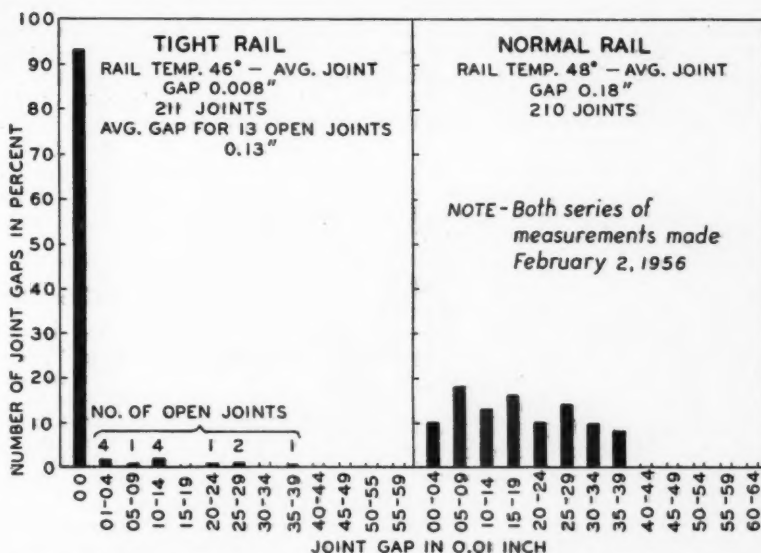
Ballast Shoulder Widened

(After laying the rail, the track was smoothed or spot surfaced with a power tamper. Additional slag ballast was then applied to increase the shoulder width to about 10 in more than normal. Most of the test stretch has two tie-plate lock spikes for hold-down fastenings. The track is laid on creosoted hardwood ties and had excellent line and surface when inspected in September 1955.

(No lubrication was used on the joints. In assembling the north 40



JOINT GAP measurements made during warm weather show practically all joints entirely closed in tight rail section.



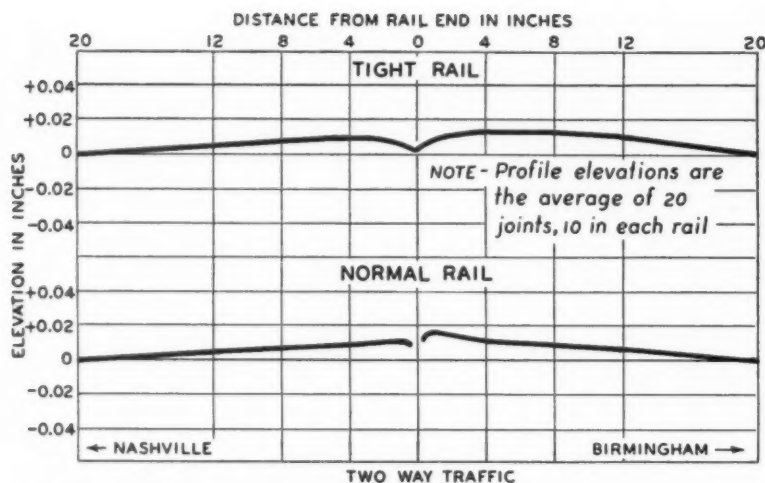
WINTER READINGS show most of tight rail joints still closed, while nearly all those in normal rail are open.

joints an attempt was made to remove the quenching oil from the joint bars, but with little success. No abrasive was used on these joints. For increasing the slippage resistance of the next 100 joints, thin coats of shellac and powdered aluminum oxide were applied to the contact surfaces of the joint bars. The remainder of the joint bars were placed without surface treatment.)

Measurements Show Effectiveness

The AAR research staff, said Mr. Magee, is conducting observations and test measurements on this installation for the Track Committee

to develop information that appears to have significance in comparing the performance of rail laid tight with "frozen" joints with normal rail. For example, in tests previously conducted on loss of bolt tension it was noted that, where there was no indication of any slippage of the rail ends in the joints throughout the year, there was very little, if any, loss in bolt tension and little fishing-surface wear indicated for this condition. Accordingly, for purposes of comparison, both loss in bolt tension and out-to-out joint bar readings are being taken on a number of joints in both the tight-rail installation and the normal rail installation.



RAIL PROFILE measurements show appreciable difference between unhardened ends of "frozen" joints and hardened ends of normal rail.

In addition, measurements are being taken periodically of the joint gap openings. The accompanying diagrams give the results of measurements taken during the warm weather in the fall of 1955 and during the winter of 1955-1956 with low rail temperatures. It will be observed from these diagrams that there is a significant difference in the joint-gap openings of the tight rail and the normal rail. With the tight rail at the high temperature reading, practically all of the gaps were entirely closed, whereas there were an appreciable number with openings in the normal rail. In the winter readings with low rail temperature a relatively few of the tight-rail gaps showed any opening, and practically all of them were tightly closed. However, with the normal rail practically all of the joint gaps were open and there was a variation in the amount of opening typical of normal track.

Measurements have not continued over a long enough period to produce any information on rate of loss of bolt tension or of joint bar wear, according to Mr. Magee.

Measurements are also being taken of the rail profile over a number of joints in both the tight and normal rail, and while these measurements have not been of sufficient duration to indicate conclusive results, an accompanying diagram does indicate that there is some flow or batter at the unhardened rail ends in the tight rail installation, whereas none is indicated on the hardened ends of the normal rail.

In the three years of service on the tight rail, chipping has developed at many of the joints, and

this has been repaired by welding. Although the service period, as previously stated, has not been long enough to develop conclusive results, it is Mr. Magee's opinion, from the results so far, that it would be preferable with tight rail to have the rail ends hardened and beveled as in ordinary or normal construction to avoid difficulty with chipping. If this is done it would perhaps require some

grinding after eight to ten years' service to remove the unevenness in wear between the hardened rail end and the remainder of the rail, but this would appear to be less objectionable and less expensive than repairing the chipped ends by welding.

Most of the rail joints in the installation look very fine after three years of service, and in many cases the metal has flowed under the wheel loads so that it is practically impossible to detect where the rails end, and the top of the rail has the appearance over the joint of a uniform section, said Mr. Magee.

Measurements are also being taken to determine the amount of rail movement on both the tight-rail and normal installations from monuments provided at intervals along the length of the test section. Measurements to date show the movements that have developed during the short period that the research staff has been making these observations. The initial measurements were taken last fall and the measurements taken during the winter at low temperatures indicated some slight pulling in of the rail at the ends of the tight rail section, but the amount is not enough to be of any significance.

What Other Railroads Are Doing

At least two other railroads are known to have installations of "frozen" joints under observation. In addition, another road—the Chesapeake & Ohio—is planning to install a total of four miles of such rail this year for test purposes.

The C&O installation will be in four separate stretches, each about a mile in length. Two of these will be on the road's Northern Region—one near Benton Harbor, Mich., involving new 115-lb rail, and the other south of Toledo, Ohio, which will consist of new 132-lb rail. The other two installations will be on the Southern Region. The purpose of making the installations at scattered locations is to study the performance of the tight-joint construction under a variety of climatic and other conditions.

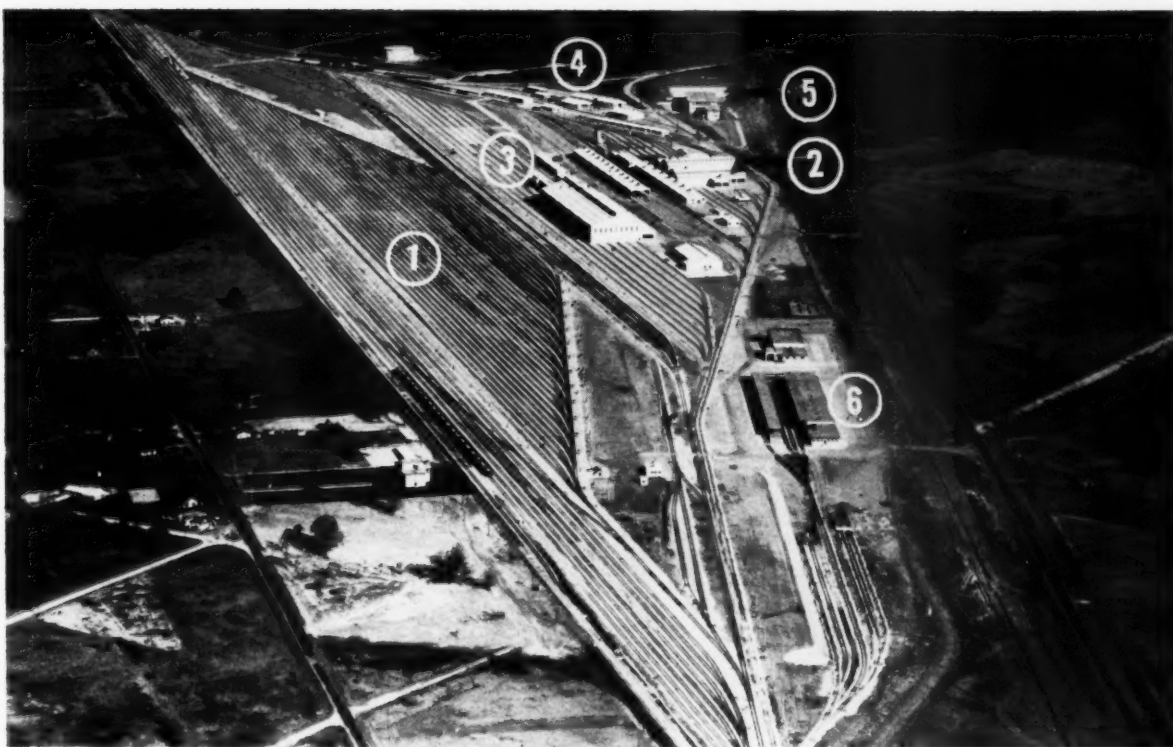
Of the other two roads with installations of tight joints, one has a total of 27,240 track-feet of such construction. It has four installations in station platforms totaling 5,000 ft, three in tunnels totaling 17,640 ft, and two in open track totaling 4,600 ft. All these installations were made with 132-lb RE rail. For the most part the anchorage consists of compression clips on every tie in the test areas, with the ties being box-anchored for some distance beyond the ends of the test area.

These sections were installed in 1952. The road recently reported that only 1

per cent of the rail ends were rolled over and 3 per cent were spalled. Asked to name the advantages of such construction the road reported that it "gives a comfortable ride, eliminates rail-end batter, has less chipping and reduces rail-end welding."

The other road that is testing tight-joint construction has eight installations, four through station platforms and four in open track. The total length is 5,000 track-feet. About 25 per cent is anchored with compression clips on every other tie, and 75 per cent with base-type anchors. Where anchors of the latter type are used three rail lengths at each end are box-anchored at each tie, while the center sections are box-anchored at every other tie.

The installations on this road were made in 1951. The road recently reported that about half of the joints were holding and half were open about 1/16 in. About 10 per cent of the joints are rolled over and 2 per cent are spalled. Asked to state the advantages of this type of construction the road said there is "no batter, or low joints and less chipping," and that the rail is "easily replaced if damaged or worn." The only disadvantage mentioned is the fact that "additional anchorage is required." The over-all results are characterized as "very satisfactory."



NEW \$8½-million Deramus yard of Kansas City Southern near Shreveport, La., is a city in itself. The terminal has its own communication, electric, water, gas, drainage and sewage systems. The yard includes a 30-track classification yard (1), and engine terminal (2), car repair (3), roadway (4), administrative (5), and freighthouse facilities (6). The new yard will supplant three existing yards at congested points in the city, except that one yard will be used for interchange with other roads.

News Briefs in Pictures . . .



AN INTERNATIONAL DROTT TD-14 skid-shovel (above), equipped with 36-in forks bolted to the bucket, provides the means for distributing 5,000 lineal ft of concrete drainage pipe over the 60-acre site of the new \$8 million Information Center at Williamsburg, Va.



WROUGHT IRON tie-spacer bars are placed outside the rails on the left track of the Chicago, South Shore & South Bend's bridge across the Calumet river near Chicago. Creosoted timber tie spacers are still in use on the right track. Developed by A. M. Byers Company, Pittsburgh, Pa., the spacer bars are said to be resistant to corrosive brine and effective in absorbing shock and vibration caused by passing trains.



WHAT'S THE ANSWER?...

... a forum on track, bridge, building and water service problems

Advantages of Self-Guarded Frogs

What are the advantages in the use of self-guarded frogs when compared with the use of independent guard rails? Disadvantages? Has the introduction of diesel power affected the use of self-guarded frogs? Explain.

Maintenance Is Reduced

By O. T. CARROLL

Chief Engineer,
Peoria & Pekin Union, Peoria, Ill.

We are discussing the use of self-guarded frogs in yard tracks only. To provide more track room, we use lap switches on the leads of our yards. We find that self-guarded frogs are more economical to install as the two frogs necessary in a lap switch require special guard rails. It takes less maintenance for self-guarded frogs than unguarded frogs with guard rails.

We have experienced a disadvantage in that a wheel with a wide tread will occasionally catch and climb the guard rail of the self-guarded frog.

The introduction of diesel power reduced the maintenance of tracks on the leads. This is true with either type of frog, but I think more so with the self-guarded one. The steam engine, with its longer and more rigid wheel base, tended to catch the guard rail of the self-guarded frog. The diesel has practically eliminated this hazard.

Self-Guarded Frog Is Superior

By E. R. MURPHY

Assistant Engineer of Track,
Eastern District, New York Central,
New York

I believe the self-guarded frog is much superior to the one with guard rails in yard tracks where speeds of not over 15 or 20 mph are involved.

The installation of the self-guarded frog is a much simpler job than that of frogs requiring guard rails. The cost of a self-guarded frog is usually considerably lower

than that of a rigid frog, including the guard rails.

Maintenance of the guard rails, particularly on the turnout side, requires considerable work, and very close inspection to avoid derailments. This is particularly true in the winter in locations subject to heavy snowfall and low temperatures. Self-guarded frogs eliminate the expense of keeping the guard rails free of snow and ice.

When I first became acquainted with self-guarded frogs, 29 years ago, they were just then coming into use on our railroad. Based on this experience, I know of no disadvantages other than that encountered with the joint bar at the toe of these frogs. More attention is re-

quired to keep this joint tight than is required to keep the same joint tight on rigid frogs which use our standard bars.

So far as I know the use of diesel power, which is practically 100 per cent on our railroad, has not affected our use of the self-guarded frogs, nor presented any problems.

Self-Guarded Frogs Save Labor

By M. S. REID

Division Engineer,
Chicago & North Western, Chicago

Self-guarded frogs were first put into use in heavy-switching areas to eliminate the labor required to maintain guard rails to proper gage. Prior to the installation of self-guarded frogs, a good share of the track laborer's time was used up in checking and regaging of guard rails.

The installation of self-guarded frogs has not only made a saving

Answers to the following questions are solicited from readers. They should be addressed to the What's the Answer editor, Railway Track and Structures, 79 W. Monroe St., Chicago 3, and reach him at least five (5) weeks in advance of the publication date (the first of the month) of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered in the September Issue

1. With respect to riding qualities and economy of maintenance, what are the relative advantages of spring-rail and rigid frogs for main-line service? To what particular class of main-line service is each best adapted? Explain.

2. What practical methods can be used to reduce the breakage of windows in shops and enginehouses? Should the replacement of broken glass be done currently or should it be programmed? Explain.

3. The introduction of electronic data-processing and computing machines on the railroads is making tailored up-to-date cost and performance figures quickly available. What job and cost performance reports and data should prove most valuable to the engineering

and M/W departments? To what extent are they being made available? Explain.

4. What performance characteristics and capacities are most desirable in pile drivers for heavy bridge and building work? How is the most suitable length of leads determined? Size of hammer? Explain.

5. Track ties are generally adzed and prebored to a fixed number of standard templates on each railroad. The smallest template used on a given road frequently does not fit the base of branch-line rail. Under these circumstances, should the ties furnished branch lines be prebored? Why? Explain.

6. What is the significance of the pH factor in water analysis? How does this factor affect the usability of water for cooling and heating purposes in diesel locomotives? Explain.

in the labor of regaging guard rails, but has permitted us to do away with at least one guard rail and assembly in heavy-switching territories and two guard rails and assemblies in light-switching territories. We have used a guard rail on the turnout side with our self-guarded frogs in heavy-switching areas to eliminate excessive wear on the guards of the frog. We have also found that the use of self-guarded frogs has extended the life of switch ties as compared with the use of frogs with independent guard rails, as the elimination of guard rails, in turn, eliminates re-spiking.

In heavy-switching areas where a minimum number of trackmen are employed, the use of self-guarded frogs reduces the possibility of derailments. In such yards there has not always been a sufficient number of trackmen to insure

proper gage between frog and guard rails where the ordinary frog and independent guard rail has been used.

I would not recommend the use of self-guarded frogs in high-speed main track or in areas where snow-plows are required to operate.

I do not feel that the introduction of diesel power has materially affected the use of self-guarded frogs.

Gives Added Timber Life

By J. R. TALBOTT, JR.

Supervisor of Track,
Richmond, Fredericksburg & Potomac,
Richmond, Va.

This type of frog, by eliminating the use of separate guard rails and the necessary other track material,

represents an initial saving in material and the cost of labor for installing same. Further, it reduces later maintenance costs and inventory.

We have had this type of frog in use for several years and it has been my observation that they are giving better service, with a minimum of maintenance, than the conventional frog with independent guard rails.

Since this type of frog has fewer parts due to its integral casting, it is more rigid. This in turn distributes the load over a wider area and, I believe, results in added timber life.

The self-guarded frog should be used in moderate speed territory such as yards or terminals only. Particular care should be exercised when track motor cars are operating through them as they may be derailed.

Composite Decks for Highway Overpasses

What are the economic advantages of timber-concrete composite decks for highway overpasses? Disadvantages? To what particular type of structure is this type of deck best suited? Explain.

Varies With Locality

By L. P. DREW

Assistant Chief Engineer,
Union Pacific, Omaha, Neb.

The advantages and disadvantages of timber-concrete composite decks vary in different localities and are governed largely by availability of suitable timber at favorable prices. As an illustration, in the Pacific Northwest where Douglas fir in select structural grades is available at reasonable price and adequate treating facilities are available, wood-concrete composite decks prove most economical and have been used very extensively. The reverse, of course, would apply where timber is not available or commands prohibitive prices.

Climatic conditions may have some bearing, but usually, with proper treatment after framing, such conditions have little or no effect on the life of timber.

The use of timber-concrete composite decks is best suited to highway overpasses having relatively short spans so that timbers of common commercial sizes can be used. If over-size or extra-length timbers are required, the advantages are

very materially reduced and oftentimes other materials, such as structural steel or prestressed concrete, will prove more economical.

Forming and Falsework Reduced

By C. H. NEWLIN

Engineer of Bridges, Eastern Lines,
Southern, Charlotte, N. C.

Timber beams may be joined to a concrete slab in a T-beam type of construction similar in every respect to concrete T-beam construction. This type of composite structure is generally less expensive than concrete T-beam construction where the size of timbers required is within the limits of commercial solid-sawn timbers. Glued, laminated timbers can be used but at present prices they are usually not economical.

The more common type of timber-concrete composite deck is a slab produced by nailing together 2-in planks set on edge and pouring thereon a concrete "wearing surface" with adequate connections to make the two act as a unit. The

term wearing surface was placed in quotes because it is usually desirable to use thicker concrete than would be required for a wearing surface alone. The widths of adjacent timber pieces usually differ by two inches so that with the bottoms at the same elevation the tops provide a staggered pattern to aid in bonding the concrete to the timber.

Obviously, this type of construction is not suited to thin slabs. The practical upper limit of thickness is controlled by the width of timber pieces obtainable, since the timber should comprise one half or more of the total depth. The span length or length of continuous slab is not limited by the length of lumber available because butt joints can be used if their location and staggering are controlled. The timber-concrete slab is generally less expensive than a concrete slab within the limits given above except where concrete forms are not required as for slabs poured on the ground.

The economy of timber-concrete composite construction is due in a large part to the small amount of forming and falsework required although due credit should be given to the fact that timber is the least expensive of our structural materials. Falsework can often be eliminated.

While timber-concrete composite decks can be used nearly anywhere that concrete decks can be used their greatest advantage is where falsework must be kept to a minimum as in highway overpasses where underclearance is limited

Local M/W Forces in Public Relations

What is the function of local maintenance-of-way forces in the overall public-relations program of their railroad? What can they contribute toward improving these relations? Explain.

All Employees Are the Railway

By J. P. REINHOLD

Assistant to the President
(Public Relations),
Atchison, Topeka & Santa Fe, Chicago.

All Santa Fe employees are, in a measure, public relations representatives. Within the circle of their acquaintances they are the Santa Fe Railway.

In this indirect manner local maintenance-of-way employees function in the company's over-all public relations program. The majority of these people live quietly in the community. They pay their taxes, send their children to school, attend church and participate in local government and civic affairs.

One section foreman living in a Kansas community has twice been elected mayor and remains an important figure in the behind-the-scenes civic life of that community. He has raised a large family and one of his sons is presently a Rhodes Scholar in England.

Signal maintainers are another group of localized people who make important contributions to the communities in which they live. Several of them have taken very active roles in civic affairs.

It is not unusual to find that most of these employees have, through their local public contacts, become good friends of Santa Fe patrons.

Be Active in Civic Affairs

By C. E. WELLER

Division Engineer,
Illinois Central, Jackson, Tenn.

The people who live in and are a part of a community are the foundation of good public relations. They should be encouraged to take active part in civic affairs. Every aid should be given to them. Suggested topics and material for talks, as well as film and outside speakers should be available when necessary.

They should be encouraged to belong to such clubs as Rotary, Kiwanis, Civitan, etc. They should be encouraged to be active in such local affairs as the P.T.A., school meetings, and other social and church activities.

Whenever possible, correspondence and local business matters should be handled through them. Division and general officers should always invite them to be present when visiting the local citizens.

We should never forget that our railroad is judged on the basis of association with its local people. These people are the foundation we must build upon and the medium we must work through in order to obtain good public relations.

Four Ways to Help

By RALPH O. BAIRD

Manager—Public Relations,
Southwestern Region,
Pennsylvania, Indianapolis, Ind.

In one way or another, all railroad employees have some effect on the public-relations program of a railroad. However, certain groups play a more important part in public relations than others, and among these groups is the maintenance-of-way department.

A woman is judged by the house she keeps—and so is a railroad. The condition in which the public finds the railroad right of way, bridges and buildings—as well as the condition of the rolling stock—all help to create a "climate" in which the railroad operates. Well-kept, clean ballast, buildings and bridges, and grade crossings in good repair, form a good impression of the railroad which owns them. In a negative sense it is noticed immediately, even if only subconsciously, if these things *aren't* in good condition.

There was a time when a railroad section crew had the reputation of being a bunch of roistering interlopers who descended on a community, on payday, wreaked havoc until their money was spent and then returned to work until the next payday. Fortunately, except for scattered instances, that situation doesn't exist today. Railroad section men are well-behaved, respectable citizens of the communities in which they live and, as such, create a good impression for their employers.

No railroad public-relations department is large enough to know

what's going on in every town on line. The maintenance-of-way people eventually visit every on-line community in their work. In the course of working through their territories, they constantly hear of local grievances which might involve the railroad. Prompt notification of the public-relations department can extinguish a small fire before it becomes a big one.

Certainly, by doing his job well and promptly, the maintenance-of-way department can be of tremendous help. The motorist whose car is damaged on a rough grade crossing; the farmer whose field has become the repository for M/W debris; the passenger who can't sleep because of rough roadbed—and all others with such experiences can help create a bad reputation for a railroad. A poorly indicated or partially obscured grade crossing can be not only a safety hazard—it can be a public-relations hazard the first time a carload of youngsters is hit because of inadequate warning and poor visibility.

In working out allocation of M/W funds, public relations thinking should determine which one of two similar maintenance problems should be solved and which one deferred. Similar thinking should govern when it's simply a matter of deciding which job to do first. The job to do first—all other things being equal—is the one that will create the greater public-relations problem if left undone.

These, then, are the ways in which maintenance-of-way people can be of help in public relations: Through good housekeeping; alert awareness of public opinion and prompt reporting of it; living as good citizens in their communities; and judicious allocation, wherever possible, of their working funds.

Everyone Is a "Salesman"

By H. M. WILLIAMSON

Engineer Maintenance of Way and
Structures, Southern Pacific Company,
San Francisco, Cal.

The function of the local M/W forces in the overall public relations program of a railroad is of extreme importance and one that unfortunately is too often neglected. In many instances our maintenance people through the roadmaster or section foreman are one of the first contacts the railroad has with a new industry when locating on our lines.

When a new spur is constructed

to serve a new industry there are often many problems that arise which affect both the industry and the railroad. These are often of a minor nature that can be resolved on the ground. If the maintenance people direct a friendly, courteous and sympathetic view towards the industry's problem, a good impression of the company as a whole is immediately formulated by the personnel of the industry. If on the other hand their problems and questions are brushed aside with a brusque reply that "this is the way it is done on the railroad and it is the way it will have to be," a potential source of antagonism is

created that is hard to correct.

Construction of industry trackage is only one of the many contacts our maintenance people have with "outsiders." Maintenance people are continually being approached by city and county officials regarding such problems as road crossing repairs, minor drainage matters, weed control, and general housekeeping. By adopting a cooperative friendly attitude towards performing the work that the railroad is obligated to do, a friendly cooperative feeling is generated which not only benefits the railroad, but in many instances is of benefit to the maintenance men involved when pros-

ecuting his own work. A friendly city or county official can be of very great help in getting streets temporarily closed for performance of track work and many other items.

The same applies with state and federal foresters where railroad lines go through state and national forests. A friendly relationship between the roadmaster and local forestry official can be of utmost benefit to both organizations.

Railroads are judged by the men who work on the roadway, to almost the same extent that they are judged by people who specialize in the public relations field, everyone is a "salesman" for our railroads.

Lighting Modernized Passenger Stations

When passenger stations are modernized, what type of lighting is best adapted for use in waiting rooms? Does the size of the room affect the type of fixture used? What intensity of illumination should be maintained? Explain.

Need More Than One Type

By A. A. MELIUS

Architect, Northern Pacific,
St. Paul, Minn.

Type of lighting becomes, rather, types of lighting as conditions and requirements vary. For short-time use the incandescent type is more economical as the initial cost is low although the operating cost is higher. For long-time use the fluorescent type is the more economical. In this case the initial cost is high but the operating cost is lower.

Flush-type fixtures create a more pleasing source of light and have been the most satisfactory as either incandescent or fluorescent types can be used. With this type there is no dust problem such as we have with suspended fixtures.

The higher the ceiling, the higher the cost of maintaining the proper light intensity. Ceilings can be lowered and flush lighting easily installed. If it is not practical to lower the ceiling, the fixtures can be suspended. Fluorescent fixtures solve most problems of this type.

We maintain 20 footcandles at reading level. Supplementary illumination such as spotlighting of the flush type can be brought in to focus attention on any object or location.

Larger rooms are more adaptable to variation in lighting. By controlling the number of lights with switches, seating areas can be

brightly lighted in one area, for patrons who wish to read, while subdued lighting can be supplied in other areas for those who wish to rest.

Has Used Luminous Ceilings

By R. E. LILLISTON

Architect, Kansas City Southern,
Kansas City, Mo.

Modernization of an old passenger station generally includes provision for an air-conditioning system. To conceal air-conditioning duct work, we are generally able to lower the ceiling, utilize a hung ceiling, and install air-conditioning ducts above it. Thus, we are able to introduce flush-type lighting fixtures. We have found these to be more free from maintenance than exposed-type fixtures. We have gone almost completely to fluorescent-type lighting in our modernization program.

In the case of larger passenger stations we utilize incandescent spot lights or concealed pin-point lights to add importance to certain areas such as the ticket counter, phone booths, luggage lockers, etc.

Luminous-type ceilings offer many possibilities and we have used them in some cases. A luminous ceiling is general more adaptable for use in a larger office area

but we have used it for passenger stations with good results. A recommendation for a luminous ceiling should only be made in passenger depots in larger cities where the maintenance problem is under better control.

We have found an intensity of 15 footcandles is ample for most waiting rooms. This intensity may be reduced if certain areas, as mentioned above, are subject to higher intensity by the use of spotlights.

However, when luminous ceilings are incorporated the overall intensity can be appreciably lowered. This is due to the diffused overall pattern of light as opposed to light originating from individual sources.

There Are Two Methods

By W. G. HARDING

Architect, Wabash, St. Louis, Mo.

When modernization of passenger-station waiting rooms is undertaken, consideration must be given to several factors such as the architectural characteristics of the building, the size and height of the area under consideration, and structural features, such as columns, beams and other obstruction, before the layout is made.

The most popular way of passing the time between trains or while waiting for a train is by reading newspapers or magazines. In order to provide sufficient lighting for this purpose a lighting intensity of around 20 footcandles is needed. A higher level of illumination would be needed for steady hour-by-hour reading, but for intermittent reading this level has been considered sufficient.

There are two methods of ob-

taining this level of illumination.

- (1) Entirely by general lighting.
- (2) By a combination of general and supplementary lighting.

In the waiting rooms of small stations the level of illumination may be obtained by general lighting. Furthermore, the added attractiveness that will be imparted to the general appearance of the room, if it is well lighted throughout, will justify such an installation.

In medium-sized waiting rooms the level of illumination can be provided by general lighting plus supplementary lighting. If 5 or 10 footcandles of general illumination are provided throughout the main area, the lighting may be supplemented by an additional 10 to 15 footcandles of localized lighting in the reading areas. This supplementary lighting can be furnished by fluorescent or filament-lamp

luminaries, mounted behind the seats where back-to-back benches are used or in some cases recessed in the ceilings as downlights.

In small stations where actual hours of operation per day are limited, the most economical lighting system will usually be one using filament lamps. This system may use diffusing-glass enclosing globes or indirect-type luminaries. When enclosing globes are selected, they should be of adequate size for the lamp used.

Indirect lighting systems are not recommended where maintenance of lighting equipment is a problem or where efficiency is important. They have an advantage, though, over enclosing globes from the standpoint of pleasing appearance.

Fluorescent lighting usually costs more in the initial installation. However, it is less expensive to op-

erate. When the lighting is used a good share of the time, the overall cost is less with fluorescent. Another factor that favors fluorescent lighting is that of appearance. Architectural lighting treatments utilizing lines of line or built-in fixtures have a modern up-to-date appearance that suggests innovation and progressiveness.

Layouts with units parallel and perpendicular to the walls are good practice. However, to keep the room from having a crowded appearance, fixtures should be kept several feet from the wall. Another way to avoid a crowded appearance is to interrupt or break the run occasionally where continuous row lighting is laid out. Future maintenance should also be given consideration when planning the layout, for when fixtures are inaccessible or difficult to clean maintenance will suffer.

Contamination of Drinking-Water Lines

When repairing or installing water lines that will handle drinking water, what precautions must be taken to insure that their interiors are not contaminated? Under what circumstances, if any, may it be necessary to sterilize such lines before they are placed in service? How best may this be done? Explain.

Disinfect All Opened Mains

By H. M. SCHUDLICH

Engineer Water Service,
Northern Pacific, St. Paul, Minn.

All newly laid or repaired mains, or mains that have been broken to connect with branches that convey sanitary water, must be disinfected. Also, if there is evidence of gross contamination due to a cross connection, flood, operating irregularities, or failure of the plant chlorinating equipment, it is mandatory that the piping system be thoroughly disinfected and bacteriological samples be taken for analysis. The task of flushing, disinfecting and bacteriological sampling should be done by a person thoroughly trained in the procedure and he should be competent to evaluate the importance of the different operations.

A brief resume of the recommended procedure is as follows:

- (1) The pipe and fittings should be cleaned and, if necessary, swabbed with strong chlorine or bactericidal solution.
- (2) The trench should be dry to prevent ground water from entering the pipe.
- (3) The end of the pipe should be

closed, preferably with a heavy canvas sack, while the connecting joint is being made to the adjacent pipe.

(4) Once the connecting joint is started, it should be completed.

(5) When pipe laying is not in progress, or at the end of the shift, open ends of pipe should be plugged with a water-tight seal. This provision also applies to fittings placed in the pipe and not connected.

(6) Jointing material should be molded rubber or rubber rings, asbestos rope, or processed paper rings. Hemp or cotton require pre-disinfecting with an approved bactericide before use.

(7) After completion, the main should be flushed at a rate which will provide a water velocity of at least 2.5 fps.

(8) All valves should be operated when flushing.

After the mains have been thoroughly flushed to remove any debris, chlorine disinfecting solution should be applied. This can be done with the use of several different types of materials:

- (1) Liquid Cl_2 gas and water.
- (2) Calcium hypochlorite (HTH, Perchloron or Pitchlor) and water or sodium hypochlorite and water.
- (3) Chlorinated lime (bleaching powder) of low available Cl_2 content and water.

The chlorine-bearing water should then be added to the main. It should contain more than 50 ppm of available free Cl_2 . It is necessary to allow it to stand in the main at least 24 hr, preferably longer, or until all non-spore-forming bacteria are destroyed. After the required standing period, the disinfecting solution should contain at least 25 ppm of free Cl_2 when sampled at representative points. All valves should be operated to allow the chlorine solution to contact all working parts. The chlorine solution should then be flushed from the mains and the mains placed in service.

Sometimes facilities are not available for adding of chlorine solution directly to the main and the calcium-hypochlorite powder is placed at each joint prior to jointing. In such cases a sufficient quantity is added, the main is filled with water and the flushing procedure is followed as above. The amount of 65 per cent calcium hypochlorite per joint varies between $\frac{1}{4}$ oz in a 4-in line to $1\frac{1}{2}$ oz in a 12-in line. This method, although the simplest, is the least effective as there can be considerable variation in the maximum chloride content at different points in the line. In such cases, it is necessary to maintain 0.5 ppm of chloride residual in the water for at least thirty days after the main has been placed in service.

A broken or damaged pipe line must usually be returned to service immediately after being repaired.

Disinfecting such a main could be a problem. When haste is necessary, although not recommended as common practice, the main can be sterilized by maintaining a residual of 1 to 2 ppm of free chlorine at all times at the most distant points. This residual should be maintained for more than thirty days and checks made as to water quality by bacteriological analysis.

Uses Calcium Hypochlorite

By M. A. HANSON

Engineer of Research,
Gulf, Mobile & Ohio, Bloomington, Ill.

Whenever new drinking water lines are installed, precautions should be taken to make certain the lines are free from rocks, sticks and other debris, and that the lines are sterile before being released to service.

It is good practice to thoroughly "swab" all new pipe lines, to free them of all loose matter, before laying them in the trench. Almost everyone with extensive water-service experience has, at some time, removed some type of debris from pipe lines in service. At one time or another this writer has seen a 2-in pipe removed from a 4-in line; and a baseball bat, a 2-in by 8-in board 5 ft long, and an 8-in

diameter cinder removed at various times from pipe lines.

New lines can be sterilized quite easily and inexpensively by using calcium hypochlorite with 70 per cent available chlorine. This material is marketed under various trade names, among which are HTH and Pittchlor.

The usual process used to sterilize a pipe line is as follows: Sprinkle 3 ounces of calcium hypochlorite powder (roughly 7 to 8 tablespoons) in the first length of pipe laid. Repeat this treatment in every eighth length of pipe laid. This will provide sufficient material to sterilize pipe up to 12 in. in diameter. During construction, all openings should be plugged to prevent circulation of air and loss of chlorine.

When the line is complete, turn the water into the line slowly until water shows up at the farthest end. Close the valve for 30 min. Then open the valves and flush thoroughly until the water is clear and free from the odor or taste of chlorine.

It is seldom necessary to sterilize lines undergoing repairs, unless the repairs are of such a nature that new sections are installed or surface drainage may have entered the line. In such cases, apply a dose of calcium hypochlorite, proportionate to the length, into the line before closing it up. Fill the line with water slowly attempting to

distribute the calcium hypochlorite throughout the line. Allow to stand 30 min and follow by thoroughly flushing the main and all branch lines.

Five Fundamental Points

By T. L. HENDRIX

Sanitary Engineer,
Chesapeake & Ohio, Richmond, Va.

Necessary precautions and procedures are well covered in the American Water Works Association Bulletin C-601—"A Standard Procedure for Disinfecting Water Mains"; and AREA Bulletin 525, November 1955, p. 344, Report on Assignment 12, Committee 13, "Sterilization of New and Repaired Water Wells, Pipe Lines and Other Equipment Used in Handling Drinking Water."

Summarized below are the fundamental points necessary to prevent contamination of drinking water lines:

- (1) Keep trench water and other foreign matter out of pipes.
- (2) Avoid use of hemp or jute packing.
- (3) Flush line before disinfecting, using 2.5 fps velocity.
- (4) Disinfect for 12 hr with 50 ppm chlorine.
- (5) Flush line well before placing in service.

Frog and Crossing Maintenance

It has recently been said: "We need more grinding and less welding in crossing and frog maintenance." How does one determine whether a crossing or frog should be ground or built up by welding? What factors affect this decision? Explain.

Only Three Reasons for Welding

By J. D. CASE

Assistant Superintendent Maintenance
Equipment—Welding, New York Central
System, New York

I feel there can only be one answer to this question and that is a very definite "yes we need more grinding and less welding."

This is particularly true in nearly new crossings and frogs, especially of manganese. Since new manganese is comparatively soft, a decided lip on the gage side and at the area of most impact will soon develop. If this lip or overflow is not removed by grinding, it will continue to work into the flange-

way area thus promoting excessive pressure on the point and other areas of the frog or crossing, resulting in premature fractures. Far too often some one sees this condition and immediately decides on welding instead of grinding. What has actually happened is that this overflow has developed before sufficient cold rolling has hardened the area. If correctly ground, it will take from two to three times as long for the same amount of overflow to develop a second time.

Certain fundamentals must be observed when grinding whether you have welded or not: Grind overflow off entire length of gage side on both crossing and frogs; round gage corner to approxi-

mately $\frac{1}{8}$ -in radius; and flange out area between binder rails or other junction points such as those found on railbound manganese frogs, open-hearth crossings, etc.

I believe there are only three reasons why we should weld up crossings and frogs:

- (1) The presence of fractured or broken-out areas.
- (2) Head wear is such that wheel flanges would soon begin riding the flangeway.
- (3) Batter has developed to an extent that a good ride can only be obtained by rebuilding, thus increasing the life of the frog.

Grinding of frogs and crossings is simply preventive maintenance and should be done for the following reasons:

- (1) To prevent spalling on gage side of manganese castings. As the overflow develops on castings, the point of greatest wear moves from center of ball to the gage side. Since the hardness of manganese is dependent on the wear or cold-rolling action, this gage side de-

velops an extreme hardness that will eventually begin spalling or cracking out. By grinding in time you remove this hardened area and if the correct radius is ground on the gage side the ride is again placed over the center of rail head.

(2) To prevent chipping and spalling between binder rails as in open-hearth crossings, rail-bound manganese frogs, etc.

(3) To obtain nearly as good a "ride" as you can by welding.

We feel that when there is $\frac{3}{8}$ in or more overflow the frogs or crossings should be ground.

No Specific Time to Choose

By F. L. HORN

Engineer of Track,
Terminal Railroad Association of
St. Louis, St. Louis, Mo.

The statement and the question are both misleading by implying that at a specific time a choice may be made between repairing a crossing or frog by welding or grinding. Such is not the case. The removal of flowed metal from the flangeways and the restoration of point contours by periodic grinding is preventive maintenance, while the building up by welding constitutes repair of worn or damaged portions of the frog or crossing.

The need for "more grinding and less welding" is particularly acute when solid-manganese or manganese-insert frogs and crossings are being used. The manganese steel, in the as-cast state, is generally relatively soft and must work harden under traffic. During the initial phase of the work-hardening process heavy flow of metal into the flangeway occurs. This flow continues at a reduced rate throughout the life of the casting.

The flow of metal into the flangeway reduces the flangeway width and alters the path of wheels through it. Accelerated wear and batter of the point area then result, and rebuilding by welding is required in a relatively short time. The periodic removal of flowed metal from the flangeways by grinding to original flangeway width and contour reduces the rate of wear on the point area and thereby the frequency of repair by welding.

The point should be shaped by grinding, to its approximate original contour, at the same time the flowed metal is ground from the flangeways. This will help protect the point from continued displace-

ment or batter and provide added safety in train operations. The mechanical work hardening of portions of frog and crossing castings before installation reduces the heavy initial flow of metal, but the process may not be used on self-guarded frog or crossing castings.

The flowed metal should be ground out of the flangeways when the flow becomes readily apparent to the eye or when the lip formed by the flow is about $\frac{1}{16}$ in. A flangeway gage should be used to check the progress of the grinding and particular attention should be given to properly shaping the roundings at the top of flangeways. New frogs or crossings should be carefully checked for flow each week for a period of about four weeks after their installation, and grinding performed as found necessary. After that the work hardening of the casting will result in a reduced rate of flow and inspection and necessary grinding will be required only every three to six months, depending on tonnage handled.

Welding repair of frogs or crossings is required when their condition becomes such that safety of train operation or the retention of the casting in track is prejudiced. Conditions corrected by welding may be badly worn or battered points, cracks in the casting, heavy wear on risers or other parts of the surface, or defects in the casting.

Welding Should Be Last Resort

By L. H. JENTOFT

Engineer Maintenance of Way,
Erie, Jersey City, N. J.

There are many things that must be given consideration in determining when grinding of crossings and frogs can no longer produce the desired results and building up by welding is necessary.

It is known that the running surface of a new frog is relatively soft because it has not been cold-rolled in service. After three to six months, depending on service conditions imposed upon the castings by dynamic compression (repeated impact of wheel pound) metal on the receiving side of the flange opening is displaced. This results in a depression of metal at the point of impact and a build-up of metal immediately behind the point of impact. This is the beginning of a secondary batter beyond the frog point. Where the metal flow under

impact exceeds the ductility of the material incipient failure by cracking may follow.

Castings should be inspected frequently and checked for development of this condition by using a straight edge and a flange gage. Any time the gage of the casting has an overflow which prevents the flange gage from entering the flangeway, the casting should be ground back to its original gage.

Welding should be the last resort in restoration of the running surface of a frog. While it is true that welding, when necessary, will generally increase the useful life of a crossing frog, too many variables in the welding process make it somewhat unreliable. These variables include amount of metal replaced, heat involved, air temperature at time of welding, weather conditions, interruptions in welding process, malleability of weld, time consumed in placing weld, manner or method of removing old metal, cleaning old metal for welding, etc. Failure to correctly observe any one of these items may produce an inferior weld which may fail. This is not to be construed as a condemnation of welding, but is used to illustrate the necessity for making welding the last resort for restoring the running surface of frogs.

When the batter or wear at the point of a frog is such that the metal at the side of the flange opening begins to break down due to excessive batter, fatigue, chipping, flow or defective metal, welding should be resorted to to build up and restore the original surface and gage. All running surfaces should then be ground smooth and level with the parent metal, sharp edges where subjected to traffic should be removed and given a radius where the gage side of the wheel flange is involved. Approximately $\frac{3}{8}$ -in radius has given the best results. When completed the frog should have the appearance of a new casting.

In conclusion, to get the greatest life out of a new crossing frog the procedure should be about as follows:

(1) Grind out surface imperfections in the frog caused by displaced metal as a result of batter when this becomes noticeable. Continue this process as necessary so long as there is no evidence of breaking down due to excessive batter, fatigue, chipping, flow or defective metal, or until the crossing frog is dished so that grinding can no longer help.

(2) As a last resort, restore running surface by welding.

A successful welding job should be watched and followed by grinding in the same way as a new frog.

IN WEED AND BRUSH CONTROL...

It's Cost Per Mile That Counts— Not Low Cost Per Gallon

MOST OF THE RAILROADS THAT WE SERVE stay with us year after year in making awards.

But now and then, as in most other lines of business, we lose an account.

In such cases, it is not at all rare for the maintenance engineer a year later to say to our representative—

"We awarded the business last year on a low unit price. But I will now admit to you that our cost per mile using the lower priced product was far higher than our cost when using your product and service. And the kill was not nearly as good as was the case in using your product."

There are some dozen raw materials currently used in formulating weed and brush killer. They vary from \$0.03 cents to \$3.00 per pound in cost. So it is not surprising that some low cost products reach the market from time to time. But as is usually the case—"The buyer gets what he pays for"—nothing more, perhaps something less.

So it is not surprising to find many maintenance engineers that now speak frankly, tell us that it is not a low cost product they seek but a better product, one that gives a longer kill and at a cost per mile which is really good value.

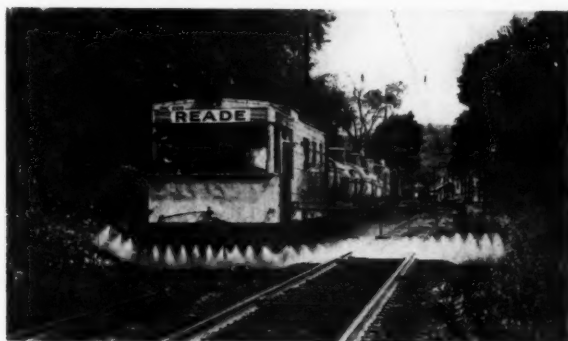
THE READE COMPANY with its 73 years of existence, with its fine production facilities, its experienced personnel, can justify the confidence of a railroad in awarding weed or brush control contracts to us.



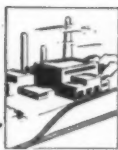
READE MANUFACTURING COMPANY, INC.

J E R S E Y C I T Y 2 , N . J .

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RAILWAY TRACK and STRUCTURES



PRODUCTS OF MANUFACTURERS...

... new, improved equipment, materials, devices

DERRICK HAS LIVE BOOM POWER

A NEW series of derricks for handling poles has been announced. Designated as series 5700, these derricks include two models, the 5700LM for poles up to 45 ft in length and a taller 5700HM model for poles up to 55 ft long. Both models

have a maximum load capacity of 6000 lb.

The derrick is raised and lowered by means of a double-acting hydraulic cylinder actuated by a hydraulic control lever located on the rear body panel of the truck. Operation of this lever moves the derrick from its overhead storage position to within 5½ ft of the ground.



**3 MEN and
a BURRO...**

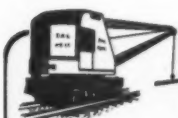
**A Real
Production
Team!**



A Burro Crane, its operator and two men on the rail will set a fast pace for the track gang to follow. Rail gangs equipped with a Burro Crane produce more work per shift at lower cost because Burros have the pace-setting speed and efficiency that helps them keep on schedule. Equally efficient with tongs, magnet, hook, bucket or dragline, Burro Cranes handle any job in stride. Fast travel speeds get them to the job in a hurry... heavy draw bar pull permits hauling work train and gang.

Only Burro Cranes Have:

- Fast travel speeds . . . up to 22 MPH
- Draw Bar Pull of 7500 lbs. often eliminates need for work train or locomotive
- Elevated Boom Heels for working over high sided gondolas
- Short tail swing — will not foul adjoining track
- Low overall height — a Burro can be worked and loaded on a standard flat car



Write for Bulletins on Burro Cranes

CULLEN-FRIESTEDT CO.

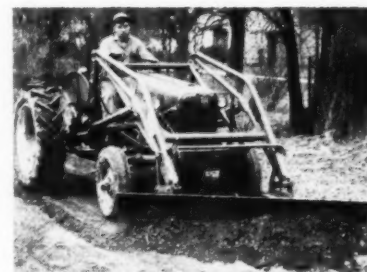
1301 SOUTH KILBOURN AVENUE • CHICAGO 23, ILLINOIS



It is said to be an easy matter to thread the winch in this position. Trussed bracing has been used to provide the needed rigidity for derrick-operating capacity.

Two types of locking, hydraulic-sleeve-lock type and pin type, are available for the side legs. With the hydraulic-sleeve lock the operator raises the derrick to vertical position then locks the leg rigidly by moving the proper hydraulic control lever which actuates the sleeve lock. A safety stop pin has been provided to make it impossible for the sleeve to become disengaged accidentally. Pin-type locking is supplied with a set of pins for each side leg, which are arranged so they are inserted in an established sequence. It is reported that the wrong pin cannot be pulled out.

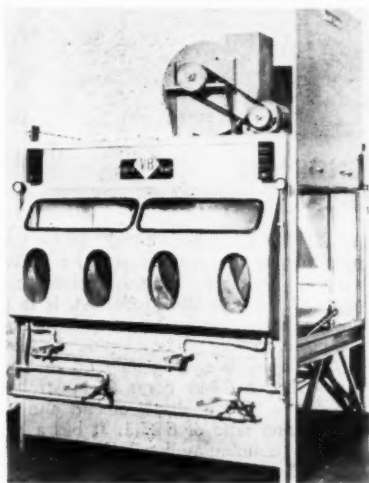
The cable-guide sheave for the winch line is attached to a trussed sheave bar which is hinged so that it swings out of the way when not in use. The derrick is about 85 in above the body floor when in storage position. When a digger is used, it is stored in a saddle between the side legs. J. H. Holan Corporation, Dept. RTS, 4100 W. 150th St., Cleveland 11, Ohio.



POWER LOADER DESIGN CHANGED

ADDITIONAL attachments and changes in design have been announced for the McCormick U-34 power loader used on the International 300 Utility tractor. The new model, known as U-34A, is equipped with a manually operated mechanical trip. Hydraulic bucket control is available if desired. The material bucket is now made with a rounded back and an extension plate for the

bucket top is available. New attachments include a crane and a blade either of which can be mounted on the loader boom instead of the materials bucket. The blade is 7 ft long and 18 in high and may be set to lead with either end, and either end may be raised or lowered with respect to the other. The pitch of the blade may be changed to increase or decrease the cutting angle. The crane is an open hook with a maximum lift height of 14 ft. It has a lifting and transporting capacity of 1,000 lb. *International Harvester Company, Dept. RTS, 180 N. Michigan Ave., Chicago 1.*



METAL PARTS CLEANED WITH LIQUID ABRASIVE

VAPOR Blast Liquid Honing is a process for removing carbon deposits and other foreign material from engine blocks, pistons, valves and other engine parts. The process is said to reduce the cleaning time of pistons to about one hour. A feature claimed for the method is that it leaves a matte (dull satin) finish which the manufacturer says is advantageous because the lubricating oil clings in the micropockets of the duller surface, reducing break-in time.

The machine is automatic and has its own pump, filters and rinsing equipment. Parts to be cleaned are put in a closed cabinet, and the operator works through spray-proof armholes to direct the blast of the liquid abrasive. Since the blast uses abrasives varying from 20 mesh (very coarse) down to 5000 mesh (finer than face powder), the metal parts that can be treated range from heavy diesel engine blocks to fine instrument bearings.

The machine is available in three models. Model 6048 has a 4-ft by 5-ft cabinet, Model 7248, a 4-ft by 6-ft cabinet, and Model 7260, a 5-ft by 6-ft cabinet. Each unit is equipped with a filtered exhaust system, an automatic filter washing system and an abrasive circulating system. *Vapor Blast Manufacturing Company, Dept. RTS, 3109 West Atkinson, Milwaukee 14, Wis.*

(Continued on page 64)

The THORO System of Masonry Protection

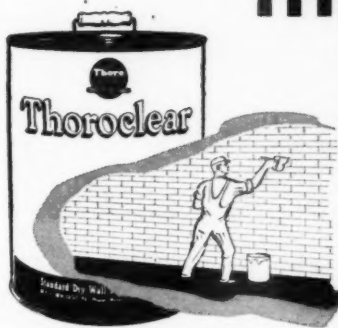
THOROCLEAR

Invisible Water Repellent

Ask your dealer about this powerful silicone water repellent developed by years of research by General Electric Company and now produced by us for your protection. *Ask for Circulars No. 30 and 31.*

No change in color or texture of brick, limestone, sandstone, tile or stucco surfaces. Applied by brush or spray.

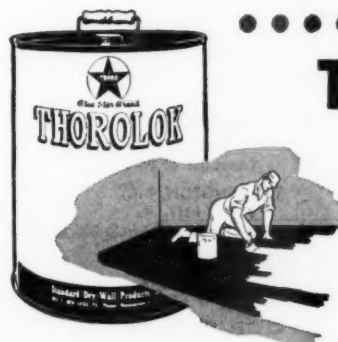
Keep water out of your masonry walls and protect interior plaster, paints and expensive furnishings.



THORITE

20 Minute Set Patching Compound

Repair those broken sills, steps, concrete floors, chimneys and other defective masonry! *Ask for circular No. 20.*



THOROLOK NO. 100

Use it for your basement or factory floors. New, with special alkali resistant pigments. *Ask for Color Card 32-C.*

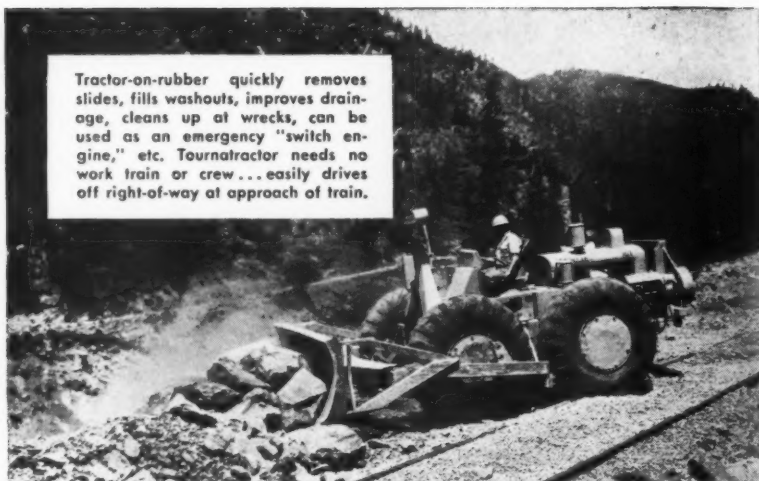
Manufacturers of WATERPLUG, THOROSEAL, QUICKSEAL

for all types of
masonry protection!

GET OUR PICTORIALLY DESCRIBED
LITERATURE "HOW TO DO IT"

STANDARD DRY WALL PRODUCTS, INC.
PHILADELPHIA, PENNSYLVANIA





Tractor-on-rubber quickly removes slides, fills washouts, improves drainage, cleans up at wrecks, can be used as an emergency "switch engine," etc. Tournatractor needs no work train or crew...easily drives off right-of-way at approach of train.

At a moment's notice...

"RUNS" to job under its own power

In less than 4 minutes, Tournatractor travels a mile under its own power to handle any railroad maintenance job in your yard or along the right-of-way. This 17 mph tractor does not damage tracks or switches, does not trip automatic block signals. It handles a wide variety of jobs quickly—cleans drainage ditches, removes slides, cuts down banks, fills washouts, reinforces causeways and bridge approaches. 1 man and 1 machine can do many of these and similar maintenance tasks in a single day.

Cuts dozing time in half. Tournatractor not only gets to jobs in less time than crawler-tractors...it also finishes them soon. Four speeds

Tournatractor drives anywhere without planking. It follows the track or travels by highway. Tires do not damage ties, rail spikes and plates, switches, or trip block signals.



Tournatractor—Trademark Reg. U.S. Pat. Off. T-781-RR-2

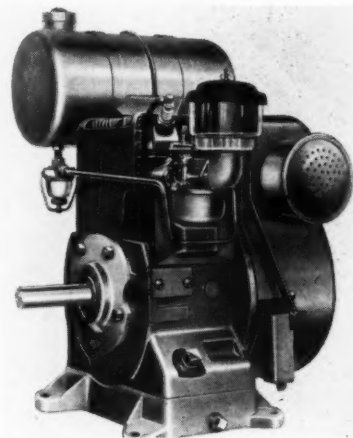


LeTourneau-WESTINGHOUSE Company

Railroad Sales Division
Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

Products of Manufacturers (Cont'd)



ENGINE IS LIGHT IN WEIGHT

AN ENGINE has been developed for use primarily as the prime mover for light-weight, portable electric generating plants. Known as the Model AJ, it is a single-cylinder, air-cooled, 4-cycle, gasoline-powered engine developing 5.5 hp at 3600 rpm. Weighing only 86 lb, the engine has a 2 $\frac{1}{2}$ -in bore; 2 $\frac{1}{2}$ -in stroke; 14.9-cu in piston displacement and a compression ratio of 8.25:1. It has a removable aluminum-alloy cylinder head and a fully counterweighted, balanced crankshaft. The engine has a high-tension magneto ignition and is started by means of a manual pull-rope, although recoil or electric starting is available. D. W. Onan & Sons, Inc., Dept. RTS, Minneapolis 14, Minn.

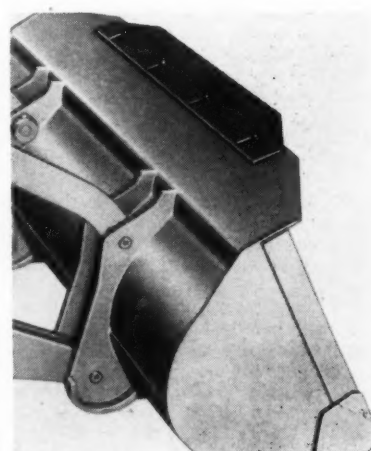
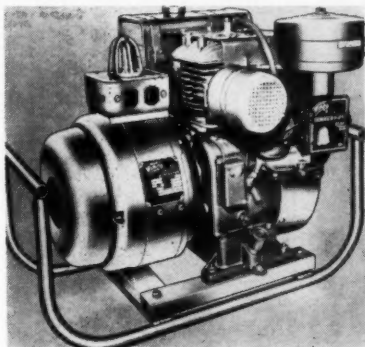


PLATE PERMITS HEAPED LOADS

A NEW bucket spill-plate attachment is said to make it possible to get heaped loads without excessive spillage when

working in loose, friable material. Designed for Traxcavators No. 977, No. 955 and No. 933, the new attachment is bolted on to the top edge of the bucket. It is adjustable and can be extended from 2½ to 5 in above the bucket spill plate. *Caterpillar Tractor Company, Dept. RTS, Peoria, Ill.*



IDLING CONTROL CONSERVES FUEL

AN IDLING control, called the "Conserv-er," is used on a lightweight, 2500-watt direct-drive engine-generator to conserve fuel, extend engine life and lower maintenance cost. It is said that a flick of the control lever will reduce the engine to idling speed. The engine-generator, known as the Winco Series 205B14S2D, is powered by a 4-cycle Briggs & Stratton engine and is designed to give unusually close and steady voltage regulation. *Wincharger Corporation, Dept. RTS, Sioux City 2, Iowa.*



MANUALLY-POWERED FASTENING TOOL

A FASTENING tool, developed to fill the need for a tool to do work in the range between very light fastening, such as is done with the ordinary hammer and nail, and heavy-duty fastening, such as that done with power-actuated tools, (Continued on page 66)



This maintenance machine is not tied to your tracks

One man, operating a modern Adams grader, drives via highway or along right-of-way to take care of scattered maintenance work without waiting to be transported by rail, and without need for a special crew. The grader goes to work immediately, cuts and cleans ditches, spreads ballast, widens shoulders, slopes banks, levels fill, builds grade for sidings, grades access roads, removes brush and weed growth, cleans up around stockpiles, water towers, coal docks, shops, yards, and does any other job required of it.

This modern grader is a big help in keeping maintenance up-to-date... fixes small troubles before they become major problems... saves expense and delays involved in postponement for work-train service.



Land, bordering track shoulders, can be leveled and cleaned regularly by a grader to maintain proper drainage. One man with an Adams slashes your payroll and machinery costs, saves time, eliminates sources of trouble before they develop.

No other grader offers the range of operating speeds found in the Adams

All Adams graders have 8 speeds forward, up to 25 mph (11 speeds including 3 optional "creeper" gears) and 4 in reverse to 13 mph for fast back-up in shuttle-grading.

Double-action hydraulic brakes assure quick, safe stops. When service brake on wheels is applied, brake holds transmission when it stops wheels. Machine won't slip.

Optional equipment adds to usefulness of grader. Scarifier rips out old asphalt, hard-packed dirt, roots, and stones. Dozer blade roots out brush, pushes debris off right-of-way, back-fills around culverts, cleans up spillage in yards. Snow plow and wing clear and spread snow in winter.

You can find out for yourself how an Adams moves big-yardage quickly.

A size ADAMS for every need

Model 220 — 60 hp, 14,865 lbs.
Model 330 — 80 hp, 20,500 lbs.
Model 440 — 104 hp, 21,500 lbs.
Model 550 — 123 hp, 23,500 lbs.
Model 660 — 150 hp, 27,730 lbs.

Traveloader — high-speed, heavy-duty, self-propelled, belt-type loader for picking up and loading into trucks from windrows or stockpiles. 55 hp gasoline or 60 hp diesel engine, 16,800 lbs.

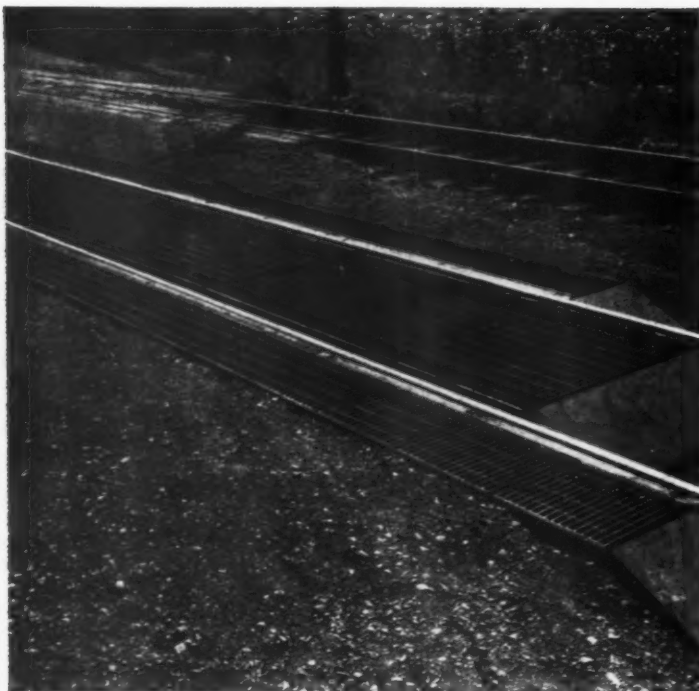
AG-33-RR-z



LeTourneau-WESTINGHOUSE Company

Railroad Sales Division
 Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company



Compare...

old style, beat up wood crossings
with modern, safe, long life...

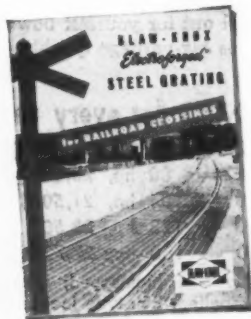
BLAW-KNOX Electroforged® STEEL GRATING CROSSINGS

When you compare the two crossings, you'll quickly see how modern Blaw-Knox Steel Grating Crossings cut track maintenance, insure smoother rides for trains, provide better traction for crossing vehicles, build public good will.

Prefabricated sections of steel grating easily installed and maintained. One section can be removed at a time for tamping tracks, cleaning ballast or removing ties . . . without holding up train or vehicle traffic.

Open mesh, self-cleaning construction permits good drainage, quick evaporation of snow and water . . . preserves life of ties.

And Blaw-Knox Electroforged Steel Grating Crossings last as long as the rails.



Write for your copy
of new Bulletin 2448



BLAW-KNOX COMPANY

BLAW-KNOX EQUIPMENT DIVISION

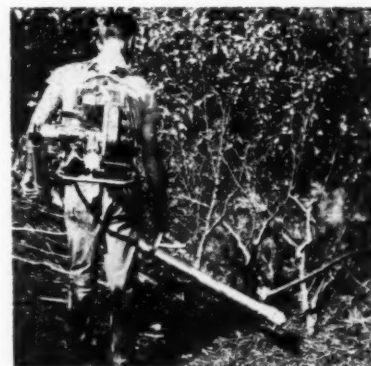
Pittsburgh 38, Pennsylvania

RAILROAD GRATING APPLICATIONS: crossings • walkways • running boards
steps • tower platforms • exhaust fan guards • battery box shelves

Products of Manufacturers (Cont'd)

utilizes the power generated by a manually swung hammer. The new tool, known as Shure-Set, is designed to seat a specially constructed fastener into a variety of materials such as concrete, concrete block, cinder block, brick and light steel. The tool is reported to be even simpler to use than a hammer and nail because the anvil or head of the tool, when hit with the hammer, drives the fastener into the surface of the work. In addition, the tool is designed to give the fastener proper support while driving. Thus, a maximum amount of the energy in the blow is imparted to the fastener. By removing the leveling base plate, fastenings can be placed in corners and other out-of-the-way places.

The special fasteners developed in conjunction with the tool are manufactured by a heat-treating process, called Austempering, which is said to provide a maximum of toughness and hardness to assure clean and simple penetration. Two types of fasteners are available—drive pins, ranging from ¼ to 3 in. in length, and threaded studs that are ½ to ¾ in. long with shanks of varying lengths. Olin Mathieson Chemical Corporation, Dept. RTS, 460 Park Ave., New York 22.



CUTTER HAS JOINTED ARM

A NEW brush cutter is designed to cut everything from fine weeds up to 12-in. trees. Known as the Senior Model, the unit weighs approximately 39 lb and is powered by a 2-cycle, 2.8-hp engine that fits on the operator's back to allow the use of both hands. It is said that the operator can stand stationary to do cutting, because the saw arm elbow and knee joints permit the operator to easily swing or tilt the saw up and down and in any direction.

The unit is equipped with an automatic centrifugal clutch that cuts in when the engine is operating at speeds of 1500 rpm. The V-belt drive is completely enclosed and a finger-tip throttle gives constant control. It is said that the cutter's saw arm can be disassembled in less than a minute for compact transportation. Southworth Machine Company, Dept. RTS, Portland, Me.



This machine for excavating intertrack ballast is only one of the many different types of track maintenance equipment lubricated with ESSO MULTI-PURPOSE GREASE.

One grease for many uses— ESSO MULTI-PURPOSE GREASE simplifies maintenance

For all types of maintenance-of-way equipment . . . ESSO MULTI-PURPOSE GREASE. It is an ideal lubricant for such diverse equipment as ballast cleaners, tampers, cribbers, screeners and many other pieces of machinery, including automotive

and construction equipment. The use of *one* grease instead of many is more efficient, more economical. Because of these benefits, more and more railroads have come to use and depend on ESSO MULTI-PURPOSE GREASE.

THREE IMPORTANT ADVANTAGES back the use of ESSO MULTI-PURPOSE GREASE:

- 1.** Outstanding in quality, it has been proved on the road and in the lab in a multitude of applications. Meeting the rigid requirements for automotive wheel bearings, it performs equally well in applications requiring a general purpose grease.
- 2.** ONE grease performs in many applications, eliminating the need for a variety of greases. It prevents the application of the wrong grease and possible damage to machinery.
- 3.** Storage and handling problems are reduced to a minimum, resulting in greater economy. It is easier to protect a single container of ESSO MULTI-PURPOSE GREASE against contamination than several partially empty special-purpose drums.



RAILROAD PRODUCTS

Valuable years of experience in research and development, along with continual testing on the road and in the lab, stand back of the outstanding performance of famous Esso Railroad Products.



THE MONTH'S NEWS...

... among railway men—the associations—the suppliers

Changes in Railway Personnel

General

James C. Warren, district engineer on the Buckeye Region of the Pennsylvania, at Columbus, Ohio, has been appointed associate general superintendent.

Engineering

J. D. Anderson, division engineer on the Canadian Pacific at Winnipeg, Man., has been promoted to assistant engineer of track at Montreal, Que., succeeding **H. J. Gordon**, who has been appointed special engineer at Calgary, Alta. **D. A. Fraser**, roadmaster at Swift Current, Sask., has been promoted to special engineer at Winnipeg, succeeding **C. R. Pike**, who has been named division engineer replacing Mr. Anderson.

H. L. Gastler, assistant process engineer on the Frisco at Springfield, Mo., has been appointed director of industrial engineering at that point.

Frank S. King, assistant division engineer on the Pennsylvania at Williamsport, Pa., has been promoted to district engineer at Cleveland, Ohio, succeeding **David E. Pergrin**, who has been transferred to Columbus, Ohio. Mr. Pergrin replaces **James C. Warren**, whose appointment as associate general superintendent is announced elsewhere in these columns.

R. M. Bailey, assistant district engineer on the Canadian National at Vancouver, B. C., has been promoted to special engineer with headquarters at Winnipeg, Man. **M. B. Hansen**, division engineer, Vancouver Terminals, Vancouver, succeeds Mr. Bailey, and **F. N. Manson**, terminal engineer at Winnipeg, succeeds Mr. Hansen.

William Ward, Jr., assistant track supervisor on the Chesapeake & Ohio at Walbridge, Ohio, has been promoted to assistant engineer, with headquarters at Saginaw, Mich.

Thomas K. Dyer, assistant to chief engineer of the Boston & Maine at Boston, Mass., has been appointed engineer maintenance of way at that point. Mr. Dyer succeeds **Harold S. Ashley**, deceased. **Raymond S. Sweeney**, assistant supervisor bridges and buildings at Boston, has been appointed assistant engineer, succeeding **John H. Watts**, whose promotion to track supervisor is announced elsewhere in these columns.

R. J. Kemper, assistant division engineer on the Missouri Pacific at Kansas City, Mo., has been promoted to division engineer with headquarters at Falls City, Neb. Mr. Kemper succeeds **C. B. Huffman**, who has retired.

Robert L. Fox, division engineer on the Southern at Alexandria, Va., has been promoted to process engineer structures, with headquarters at Washington, D. C.

John M. Trissal, assistant chief engineer of the Illinois Central at Chicago, has been promoted to chief engineer at that point. Mr. Trissal succeeds **Charles H. Mottier**, vice-president and chief engineer, who will continue as vice-president in charge of engineering. **James B. Schaub**, assistant engineer of buildings at Chicago, has been promoted to engineer of buildings, succeeding **B. M. Murdoch**, deceased. **Isaac G. Forbes**, designer, replaces Mr. Schaub.

Mr. Trissal was born on December 30, 1903, at Chicago, and graduated from the University of Illinois in 1925 with a BS degree in electrical engineering. Immediately following his graduation, he entered the service of the Illinois Central



John M. Trissal

as a draftsman and subsequently held positions as junior engineer, assistant engineer, assistant electrical engineer, and superintendent communications and electrical engineer. He was advanced to assistant chief engineer in February 1950, which position he held until his recent promotion.

J. A. Barnes, division engineer on the Chicago & North Western at Huron, S. D., has been promoted to assistant to chief engineer at Chicago. **O. W. Smith**

has been appointed acting division engineer, Madison district of the Wisconsin-Madison division, with headquarters at Madison, Wisc.

S. W. George has been appointed division engineer on the Western Maryland at Cumberland, Md., succeeding **R. B. Wooters**, who has been transferred.

D. L. Kjellman, assistant engineer on the Minneapolis & St. Louis, has been promoted to bridge engineer at Minneapolis, Minn., succeeding **J. M. Gustafson**.

M. J. Hubbard, whose promotion to assistant chief engineer of the Chesapeake & Ohio at Richmond, Va., was announced recently (*RT&S*, April, p. 71), was born on September 18, 1906, at Mayfield, Ky., and was graduated from the



M. J. Hubbard

University of Kentucky in 1930 with a BS degree in civil engineering. Immediately following his graduation, he entered the service of the Chesapeake & Ohio as a member of the maintenance-of-way department at Ashland, Ky. In November 1934, he joined the road's engineering department and was appointed assistant cost engineer in 1937 at Hinton, W. Va. From March 1939 to December 1943 he served as assistant yardmaster at Handley, W. Va., after which he was appointed assistant division engineer at Columbus, Ohio. He was promoted to division engineer at Columbus in June 1945, and was advanced to general supervisor bridges and building in 1948 at Richmond, Va., which position he held until his recent promotion.

R. H. Egbert, chief engineer for the Toledo, Peoria & Western at Peoria, Ill., has been named chief engineer and me-

(Continued on page 71)



Your best defense against weeds on tough terrain... **Concentrated BORASCU®**



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Why have more roads chosen BORASCU Weed Killers than any other to end their weed hazards about timber structures, yards and sidings? Is it because of its safety and ease of application? True, the granular form makes hand-casting quick and easy wherever a man can walk. There is nothing to mix—no water to haul. It is nonpoisonous, nonflammable, and noncorrosive to ferrous metals.

But the initial low cost of BORASCU is important, too. Actually, *Concentrated BORASCU* furnishes a greater amount of plant-destroying ingredient than any other sodium borate herbicide—at lowest delivered cost—so the economy is great.

Yet we like to think BORASCU's popularity is due primarily to the dependable long-lasting results it so safely provides. For instance, the photo shows a weed-free condition after more than 18 months since being treated with *Concentrated BORASCU*!

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JUNE, 1956

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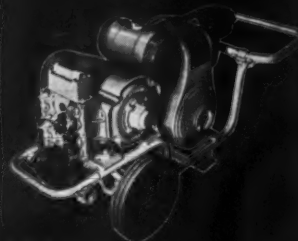
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Railway Personnel (Cont'd)

chanical officer. In addition to his former duties, Mr. Egbert will now be responsible for motive power, the car department and the machine shop.

C. E. Defendorf, who has been promoted to assistant chief engineer for the New York Central at Chicago (RT&S, April, p. 71), was born on July 9, 1912, at New York. After graduating from New York University in 1936 with a BA



C. E. Defendorf

degree, Mr. Defendorf continued his education at Brooklyn Polytechnic Institute graduating with a degree in civil engineering in 1942. He began his railway service with the New York Central in October 1945 as an architect at Detroit, Mich. He was appointed assistant engineer of buildings in Chicago in 1947 and was advanced to engineer of buildings at that point in 1955, which position he held until his recent promotion.

L. E. Brault, who was recently appointed assistant to division engineer, Memphis Terminal division, of the Illinois Central at Memphis, Tenn. (RT&S, March, p. 86), was born on January 28, 1916, at Chicago and was graduated from



L. E. Brault

Lewis Institute of Technology in 1939 with a BS degree in civil engineering. He entered the service of the Illinois Central (Continued on page 72)

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Fast Acting TRACK JACKS

15 ton capacity. The jacks set much more firmly and stand straighter under tie (without damage) or rail, due to large area toe lifts. Trip from either side. Two models have light weight aluminum housings.

ALSO: Tie removers and replacers.



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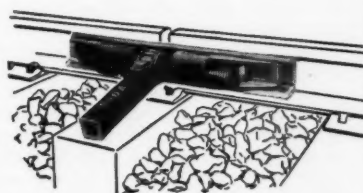
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ALSO: Cable Reel Jacks for drums 30- to 96-in. diameter.

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JUNE, 1956

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Railway Personnel (Cont'd)

on November 1, 1940, as a chainman and rodman on the road's Louisiana division at McComb, Miss. He entered military service in March 1943 and served three years with the U. S. Navy, after which he returned to the Illinois Central and was advanced to assistant supervisor of track in 1948 at Carbondale, Ill. He was promoted to supervisor of track at that point in October 1949 and subsequently held this position at Baton Rouge, La., and Decatur, Ill. He was holding the latter position at the time of his promotion to assistant to division engineer.

Joseph C. Brennan, who has been promoted to engineer maintenance of way of the Delaware & Hudson at Albany, N. Y. (RT&S, May, p. 58), was born on January 27, 1907, at Orange, N. J., and was graduated from Rensselaer Polytechnic



Joseph C. Brennan

Institute in 1929 with a BS degree in civil engineering. He entered the service of the Delaware & Hudson in March 1930 as a draftsman at Albany. He was advanced to transitman in 1933 and subsequently held positions as assistant engineer, assistant construction engineer and engineer of track. He was promoted to division engineer in 1951 at Plattsburg, N. Y., and was transferred to Oneonta, N. Y., later that same year. He was holding this latter position at the time of his recent promotion.

As announced in the May issue (p. 58), **Arthur G. Cudworth**, assistant engineer of structures of the D&RGW, has been promoted to engineer of structures.

Mr. Cudworth was born in Brush, Colo., on August 14, 1907 and graduated from the University of Colorado in 1929 with a BS degree in agricultural engineering. He began his railroad service with the Denver & Rio Grande Western in 1936 as a bridge draftsman and subsequently held positions as structural draftsman and assistant engineer. He was advanced to assistant engineer of structures in 1945, which position he held until his promotion.

R. W. Ripley, who was recently promoted to division engineer on the Northern Pacific at Fargo, N. D. (RT&S, April, p. 71), was born on November 2, 1927,

at Pontiac, Mich., and was graduated with a BS degree in civil engineering from the University of Minnesota in 1951. Immediately following graduation, he entered the service of the Northern Pacific as a chainman at St. Paul, Minn., and thereafter served as junior and senior rodman until March 1954, when he was made an inspector at Duluth, Minn. In June 1955, he was promoted to assistant engineer at St. Paul, which position he was holding at the time of his recent promotion.

R. W. Putnam, whose retirement as engineer maintenance of way and structures of the Southern Pacific at San Francisco, Cal., was announced recently (RT&S, May, p. 66), was born on March 23, 1888, at Buffalo Gap, S. D. After gradu-



R. W. Putnam

ating from South Dakota State Teachers' College in 1908, he continued his education at Colorado College and was graduated in 1912 with a BS degree in civil engineering. He began his railway career in August of that year with the Southern Pacific as an axeman with a survey party on construction of the Coos Bay Line in Oregon. On November 19, 1916, he was transferred to the maintenance of way department as an instrumentman at Bakersfield, Cal., and subsequently held positions as assistant engineer, general track foreman, assistant engineer of construction, roadmaster, assistant division engineer, division engineer and assistant engineer maintenance of way and structures. He was promoted to engineer maintenance of way and structures in April 1948, which position he held until his recent retirement.

Track

T. J. Fielder, assistant roadmaster on the Chicago & North Western at Boone, Iowa, has been promoted to roadmaster at Iron Mountain, Mich., succeeding **R. C. Erickson**, who has been assigned to other duties.

Arnold C. Trimble has been appointed assistant track supervisor on the Chesapeake & Ohio at Walbridge, Ohio, replacing **William Ward, Jr.**, whose promotion to assistant engineer is announced elsewhere in these columns.

D. J. Paquette, assistant to engineer ties and treatment of the Illinois Central at Chicago, has been promoted to supervisor of track with headquarters at Decatur, Ill. Mr. Paquette succeeds **D. Beagle**, who has been transferred to Olney, Ill., replacing **D. O. Clark**, whose transfer to LaSalle, Ill., was announced in the May issue.

Curtis Jamerson has been appointed assistant roadmaster, Norfolk division, on the Norfolk & Western, with headquarters at Crewe, Va., succeeding **J. J. Kendrick, Jr.**, who has been promoted.

E. G. Norden has been appointed supervisor of track and structures on the Frisco's subsidiary, the Alabama, Tennessee & Northern, with headquarters at York, Ala.

John H. Watts, assistant engineer on the Boston & Maine, has been promoted to track supervisor with headquarters at Salem, Mass. Mr. Watts succeeds **B. J. Casey**, deceased.

G. L. Hillman, track supervisor on the Minneapolis & St. Louis at Oskaloosa, Iowa, has been promoted to general roadmaster, with headquarters at Minneapolis, Minn. Mr. Hillman succeeds **L. R. Seekins**.

Joseph W. Smith, Jr., general foreman on the Erie at Hammond, Ind., has been promoted to track supervisor at Warsaw, N. Y., succeeding **Charles S. Bray** who has been transferred to Buffalo, N. Y., replacing **Rocco D. Ricciardi**. Mr. Ricciardi has been transferred to Paterson, N. J., replacing **Leon H. Judd**, who has resigned. **Loyal R. Henderson**, general foreman at Forest Hill, N. J., has been transferred to Hammond replacing Mr. Smith, and **Eugene D. Fern**, general foreman at Dunmore, Pa., replaces Mr. Henderson. **Jesse H. Smith** has been appointed general foreman at Dunmore, succeeding Mr. Fern.

Halden Frailey has been appointed roadmaster on the Lake Erie & Western district of the Nickel Plate with headquarters at Paxton, Ill.

Mr. Frailey was born at Herrick, Ill., on March 25, 1909. After graduating from high school in 1927, he entered the service of the Nickel Plate as a track laborer and subsequently held positions as assistant extra gang foreman, extra gang foreman, section foreman and assistant general foreman. He was advanced to general foreman in 1942, at Ramsey, Ill., which position he held until his recent promotion.

(Continued on page 74)

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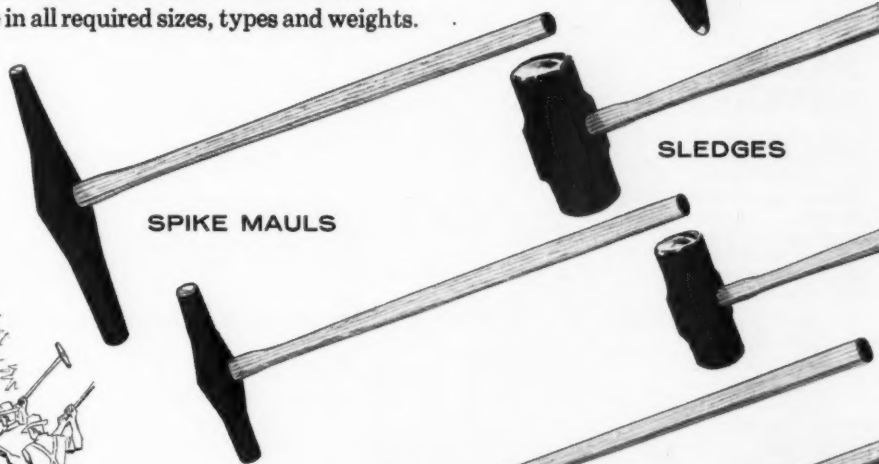
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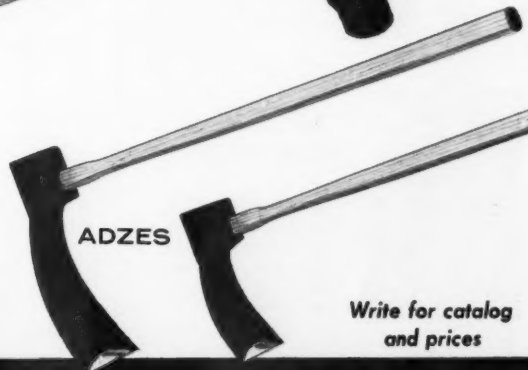
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Railway Personnel (Cont'd)

J. W. Kanan, whose promotion to roadmaster on the Northern Pacific at Pasco, Wash., was announced recently (*RT&S*, April, p. 78), was born on November 10, 1919, at Cameron, Mo. After graduating from high school in 1937, he entered the service of the Burlington as a laborer in the maintenance-of-way department. In 1941, he entered military service where he spent nearly four years with a railroad operating battalion. After his discharge from the army, Mr. Kanan joined the Northern Pacific as an assistant extra gang foreman and was promoted to track supervisor in July 1953. He was advanced to assistant roadmaster at Seattle, Wash., in September 1955, which position he held until his recent promotion.

Alvin E. Chambers, assistant track supervisor on the Southern at Greensboro, N. C., has been promoted to track supervisor with the same headquarters. **Ralph F. Cothran** has been appointed assistant track supervisor, replacing Mr. Chambers.

Mr. Chambers was born on April 20, 1925, in Franklin County, Va. He graduated from high school in 1943 and began his railroad career with the Southern as a track laborer in 1950 at Durham, N. C. He was advanced to assistant track supervisor at Richmond, Va., in June 1953

and was transferred to Greensboro, N. C., in 1954, which position he held until his recent promotion.

Bridge and Building

H. S. Talman, division engineer on the Chesapeake & Ohio at Hinton, W. Va., has been promoted to general supervisor bridges and buildings, Southern Region, with headquarters at Richmond, Va. Mr. Talman succeeds **M. J. Hubbard**, whose promotion to assistant chief engineer was announced in the April issue.

J. W. Lager, supervisor of track on the Illinois Central at Carbondale, Ill., has been appointed supervisor of bridges and buildings at Clinton, Ill., succeeding **F. A. Reed**, who has retired. Mr. Lager's former position has been abolished.

Special

Theodore S. Bean, assistant general superintendent, maintenance-of-way shops and equipment, for the Southern Pacific at San Francisco, Calif., has been promoted to general superintendent, maintenance-of-way shops and equipment, replacing **R. B. Chapman**, who has retired. **Vincent R. Erquiaga**, general supervisor automotive equipment at San Francisco, succeeds Mr. Bean, and **Robert J. Gill**

"How to Make a Track Inspection" Now available in pamphlet form

We have had many requests from readers for reprints of the series of articles on this subject published in the February and April issues of *Railway Track and Structures*. These articles were written by Leo C. Blanchard, roadmaster on the Milwaukee Road, who also authored the series on "The Art of Track Lining" and "The Art of Track Raising." The articles on track inspection tell what to look for and why when inspecting tracks, turnouts, highway crossings and around bridges and culverts.

To meet the demand for copies of these articles, they have been reprinted, in a single pamphlet. A limited number of copies are available, postage prepaid, at the following prices:

1 to 10 copies	—	\$ 0.50 each
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succeeds Mr. Erquiaga. **Walter Will**, general foreman, system maintenance-of-way shop at West Oakland, Calif., has been appointed superintendent of the shop.

Obituary

L. L. Adams, chief engineer of the Louisville & Nashville, with headquarters at Louisville, Ky., died suddenly May 3.

David W. Fry, principal assistant engineer of the Baltimore & Ohio, died at Bon Secours Hospital, Baltimore, Md., after a short illness.

Association News

Northwest Maintenance of Way Club

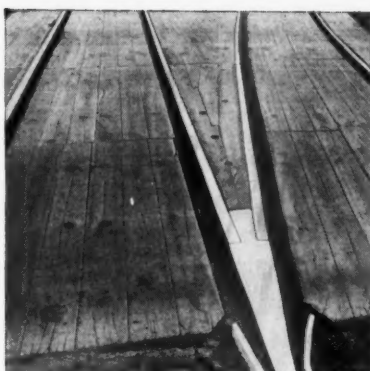
The final meeting of the season was held on April 26 at the Midway Civic Club in the Twin Cities. A total of 98 members and guests attended the meeting. The program consisted of a talk by W. B. Blix, manager, Railroad Equipment Division, Nordberg Manufacturing Company, on conditions in Mexico. Mr. Blix illustrated his talk with slides.

New officers were elected and installed at the meeting. I. W. McPherson, vice president, Minneapolis, Northfield & Southern, was advanced from second vice president to president; W. J. Cruse, engineer maintenance of way, Great Northern, was elected first vice-president; C. J. Freseman, division engineer, Chicago, St. Paul, Minneapolis & Omaha, was elected second vice-president; W. G. Nordstrom, vice-president, Robert J. Wylie Company, Inc., was named executive secretary; and L. C. Blanchard, roadmaster, Milwaukee Road, was re-elected secretary-treasurer. Elected to the Executive Board for a two-year term were: S. H. Barlow, system engineer of track, Northern Pacific; F. A. Dittloff, assistant engineer, Milwaukee Road; and F. J. Hoffman, division engineer, Chicago Great Western.

Maintenance of Way Club of Chicago

The annual meeting of the club was held at the Hamilton Hotel, Chicago, on April 23. The main feature of the program was a talk by G. M. Magee, director of engineering research, Engineering Division, Association of American Railroads. Mr. Magee gave the results of studies made to determine the performance of 78-ft rail and also told what he had found out about track laid with tight joints on the Louisville & Nashville. He illustrated his talk with slides taken in color.

In the election of officers, R. H. Bee-der, assistant chief engineer, Santa Fe System, was advanced from first vice-president to president; F. J. Corporon, superintendent way and structures, Chicago, South Shore & South Bend, and



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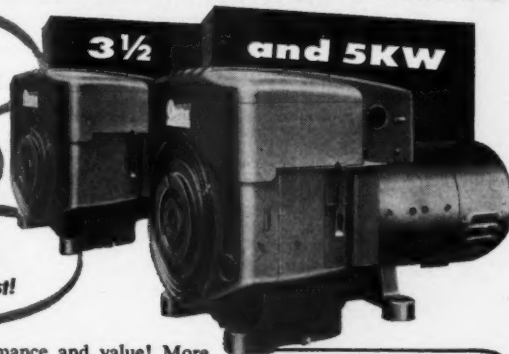
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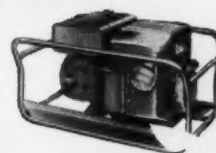
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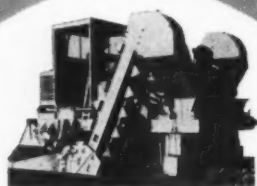
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Association News (Cont'd)

second vice-president of the club, was elected first vice-president; B. O. Johnson, office engineer, Milwaukee Road, and director of the club, was elected second vice-president; M. H. Dick, editor, **Railway Track and Structures**, was re-elected executive secretary; and S. F. Kosco, chief clerk, division engineer, Illinois Central, was re-elected secretary-treasurer.

Three new directors were elected for two-year terms: Dwight E. Perrine, assistant chief engineer, Chicago & Western Indiana-Belt; John L. Perrier, division engineer, Chicago & North Western, Chicago; and Walter F. Brietzke, manager, Railroad Machinery Division, Pettibone Mulliken Corporation.

Bridge & Building Association

The Executive Committee will hold its next meeting on June 25 at the Engineer's Club, Chicago. Plans for the annual convention to be held on September 18-20 at the Conrad Hilton Hotel, Chicago, will be discussed, and preliminary drafts of the reports of the subjects committees, prepared for presentation at the convention, will be reviewed.

Roadmasters' Association

The Executive Committee of the Association, under the direction of President W. M. S. Dunn, held a meeting at the De Sota Hotel, St. Louis, on May 14. In addition to routine business. Tentative plans for the program of the 1956 convention, to be held at the Conrad Hilton Hotel, Chicago, September 18-20, were discussed in detail. Also the Executive Committee reviewed three of the reports of special committees that will be presented at the annual meeting.

American Railway Engineering Association

Preliminary plans are already underway for the 1957 convention, to be held at the Sheraton-Jefferson Hotel, St. Louis, March 4-6. From what is known about these plans it is apparent that the meeting will be unusually interesting, and will possibly have innovations compared with the past conventions.

A considerable number of the Association's standing committees have scheduled meetings and inspection trips to be held during June. At the time of going to press the following committees had scheduled meetings during that month: Rail—AAR Research Center, Chicago, June 7; Buildings—Cosmopolitan Hotel, Denver, June 21-22 with an inspection trip to see facilities of the U. S. Bureau of Reclamation; Wood Bridges and Trestles—June 28-29, Lowry Hotel, St. Paul; Masonry—Radisson Hotel, Minneapolis, Minn., June 11-12, including an inspection of the St. Anthony Falls Hydraulic Laboratory at the University of Minnesota; Highways—Jefferson Hotel, St. Louis, June 21-22; Yards and Terminals—Houston, Tex., June 18-19; Economics

of Railway Location and Operation—Greenbrier Hotel, White Sulphur Springs, W. Va., June 28-29; Economics of Railway Labor-Inspection of Mannix ballast sled operation on the Northern Pacific near St. Paul, Minn., June 26; Waterways and Harbors—Association headquarters, Chicago, June 26; Maintenance of Way Work Equipment—Royal York Hotel, Toronto, Ont., June 4-5; and Waterproofing—Laurentien Hotel, Montreal, Que., June 27-28.

American Wood Preservers' Association

At the annual meeting of the Association, held at New Orleans, La., April 23-25, the following officers were elected: President, Noel E. Kittell, chemist and wood preservation engineer, Joslyn Manufacturing & Supply Co., Franklin Park, Ill.; first vice-president, W. W. Barger, chief inspector, treating plants department, Santa Fe, Topeka, Kans.; second vice-president, P. B. Mayfield, technical consultant, Barrett Division, Allied Chemical & Dye Corp., New York; and treasurer, W. A. Penrose, secretary of the AWP. New members of the Executive Committee are: A. M. Deiters, manager, East Point plant, Southern Wood Preserving Company, East Point, Ga.; and L. J. Jacobi, supervising engineer, inspection and standards, The Detroit Edison Company, Detroit, Mich.

Supply Trade News

General

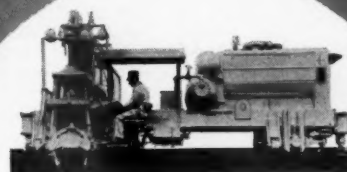
Pullman-Standard Car Manufacturing Company has announced that its executive offices will be located at 221 North LaSalle Street, Chicago.

Air Reduction Company, Inc., has announced that its executive offices will be located at 150 E. 42nd St., New York.

Racine Hydraulics & Machinery, Inc., has purchased a new plant containing 25,000 sq ft of space for the manufacture of its line of railroad maintenance equipment and power hacksaws, according to an announcement by George Christiansen, marketing manager of the company's Machinery division. Movement of production, engineering and office personnel has been virtually completed, he said. The added space will enable the firm to design and build new track maintenance equipment, adding to its present line of rail saws, rail drills, unit tie tampers and the Hydra-Quad multiple tie-tamping machine.

Gardner-Denver Company has announced the new office and warehouse building of its Los Angeles branch is now open. The new quarters are located at 7654 E. Slauson Ave., Los Angeles 22, Calif.

(Continued on page 78)



Essentials

FOR EFFECTIVE TAMPING

SPEED: McWilliams Tamper will finish tamp any raise up to 6" at speeds up to 720' per hour.

SPLIT HEAD: Pioneered by R.M.C., this feature permits raising of joints and spot surfacing as well as out-of-face general raises.

TAMPING UNDER RAILS: Machine positively tamps *under* the tie and particularly *under* the rail bearing area of the tie.

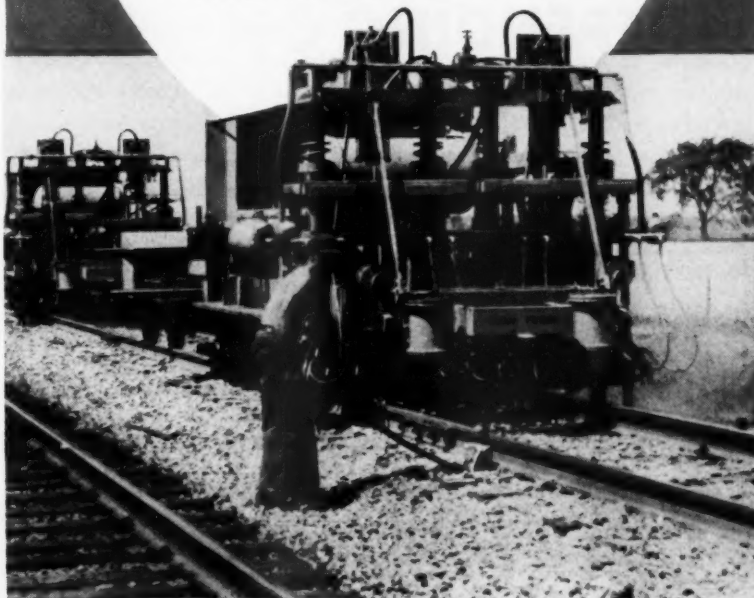
ACCURATE CONTROL: Operator accurately controls 16 air tamping tools, allowing tamping to be varied to meet roadbed conditions.

McWilliams Tie Tamper

Railway Maintenance Corporation

PITTSBURGH 30, PA.

Designers and Manufacturers of: McWilliams Mole, Super Mole . . .
McWilliams Tie Tamper, Crib Cleaner, Ballast Distributor . . . TieMaster
. . . LineMaster . . . SpikeMaster . . . BoltMaster . . . Tie Unloader



Supply Trade News (Cont'd)

Fabreeka Products Company has announced that its office address has been changed from 222 Sumner St. to 190 Adams St., Boston 24, Mass.

The International Harvester Company has announced that its Industrial Power Division will be known, in the future, as the Construction Equipment Division.

American Chemical Paint Company has announced the opening of a new office and factory at St. Joseph, Mo., to serve customers in the midwest.

The Allis-Chalmers Manufacturing Company has announced a new distribution policy for material-handling equipment, products of its Buda Division.

Now for the first time dealers for this equipment will work through 12 factory branches and a Chicago district office in serving the United States and Canada. The branches will supervise sales and service and will carry a stock of parts as well as new machines and accessories.

Allis-Chalmers branches designated include Atlanta, Ga.; Harrisburg, Pa.; Syracuse, N. Y.; Columbus, Ohio; Memphis, Tenn.; Minneapolis, Minn.; Kansas City, Co.; Dallas, Tex.; Los Angeles and Oakland, Calif.; Portland, Ore.; Toronto, Ont.; and the Chicago office.

Baton Rouge Equipment Company, Inc., Baton Rouge, La., and **Schultz Machinery Company**, Bismarck, N. D., have been appointed parts and sales representatives for **Bucyrus-Erie Company**. Baton Rouge Equipment Company will serve customers in southern Louisiana, while Schultz Machinery Company will serve those in North Dakota. **Road Machinery Company**, Phoenix, Ariz., has been appointed the company's parts and sales representative in Arizona.

Tractor Equipment Company, Reno, Nev., has been appointed a distributor in western Nevada and northeastern California.

The Caterpillar Tractor Company has announced that it will construct a new plant at Aurora, Ill., as part of an expansion program designed to increase the company's manufacturing capacity.

Koppers Company, Inc., has announced the formation of a new international company to handle all foreign activities including product sales, overseas plant operation and other activities. The newly created company will be known as **Koppers International, C.A.** **Fred C. Foy**, president and chief executive officer of Koppers Company, Inc., will also serve as the president of the international company, and **George W. Naylor** will serve as vice president and general manager. **Fred W. Rys** and **Frank B. Varga**, who have been appointed vice presidents of the new company, will serve as manager of construction projects and manager of process and royalty operations, respectively.

Personal

E. C. O'Connell, manager for **Thor Power Tool Company** at San Francisco, Calif., has been appointed manager of the company's new factory sales and service branch at Kansas City, Mo.

Dana Barker has been appointed sales engineer for the **Reilly Tar & Chemical Corp.**, with headquarters at Cleveland, Ohio.

Robert Simpson has been appointed sales representative, Railway Appliance Division, **True Temper Corporation**, with headquarters at Hingham, Mass.

Douglas A. Rieser, has become affiliated with the **T. W. Snow Construction Company**, Batavia, Ill., as chief engineer. For a number of years Mr. Rieser has been an assistant engineer on the Milwaukee Road, specializing in the design of facilities for fueling, watering and sanding locomotives.

Charles R. Gates has been appointed technical consultant on relay rail for the **L. B. Foster Company**. Mr. Gates will maintain headquarters at Atlanta, Ga.

Robert H. Morse, III, sales manager for **Fairbanks, Morse & Company**, has been elected vice president—sales and **B. L. Harwood**, general purchasing agent, has been made vice president—purchases. **J. F. Weiffenbach**, chief product engineer, has been appointed director of engineer-



DEPENDING ON REPUBLIC!

The all-important structural piles of this pier are southern yellow pine pressure-cresoted by Republic Creosoting Company.

In either fresh or salt water, creosoted wood has stood the test of time.

For dependable, long life service, obtain Republic Creosoted wood products.

*Port of Boston Authority, Charlestown, Mass. Courtesy of Merritt Chapman & Scott Corp.



REPUBLIC CREOSOTING COMPANY
MERCHANTS BANK BUILDING, INDIANAPOLIS 4, INDIANA

ing. **J. S. Peterson** has rejoined the company as manager of electronic sales, Scale Division. **Dennis C. Kennedy** has been appointed sales representative, Railroad Products Department, with headquarters at Chicago. **Robert M. Vollan**, sales engineer at Cleveland, Ohio, has been transferred to Chicago.

E. C. Chapman, assistant sales manager, Eastern Division, for the **Caterpillar Tractor Company** at Peoria, Ill., has been promoted to sales manager at that point, succeeding **W. E. McCoy**, who has been transferred to San Francisco, Calif. **Frank Foster**, assistant sales manager of the Southwest Division, replaces Mr. Chapman, and **Ralph Ehni**, district representative, Northwestern Division, succeeds Mr. Foster.

Jack G. Errion, sales promotion manager for **LeTourneau-Westinghouse Company** at Peoria, Ill., has been appointed assistant to the domestic sales manager. **Kenneth W. Chriswell**, assistant sales promotion manager at Indianapolis, Ind., has been appointed assistant advertising manager at Peoria. **David R. Harvey**, has been appointed sales promotion supervisor and **Leland B. Adams** has been appointed export advertising supervisor. **Dean A. Frost** has joined the company as supervisor of trade publicity and **Walter E. Kohrs** has been appointed external publication supervisor.

R. W. J. Harris has been appointed vice-president of the **Rail Joint Company, Inc.** at Chicago, succeeding **Alex Chapman**, who has retired. **E. A. Condit**, chairman of the board at New York, and **J. A. Greer**, vice-president at San Francisco, Cal., also have retired. **K. W. Engstrom** has been appointed district sales agent at San Francisco.

Mr. Condit graduated from Stevens Institute of Technology in 1902 with a degree in mechanical engineering and joined the Rail Joint Company as a draftsman. He was promoted to inspector in 1903 at Troy, N. Y., and subsequently held positions as sales manager at Pittsburgh, Pa., and New York, and vice-president. He was appointed president of the company in 1943 and was made chairman of the board in 1955.

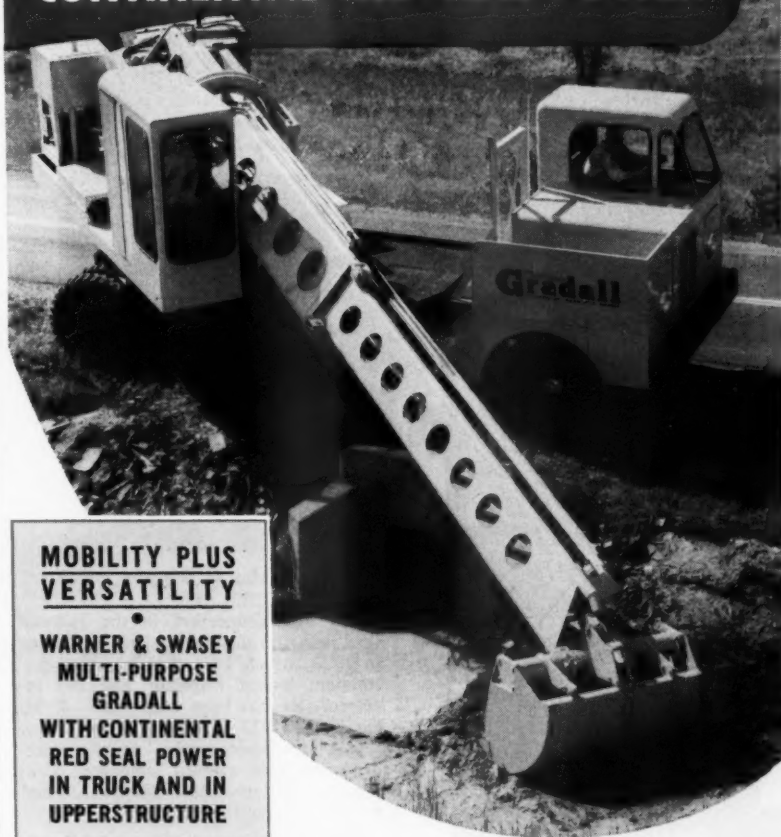
Mr. Chapman graduated from Stevens Institute of Technology in 1902 with a degree in mechanical engineering and joined the Rail Joint Company in 1903 as a draftsman. He was advanced to traveling inspector in 1905 and subsequently held positions as sales representative and district sales agent at Chicago. He was promoted to vice-president at that point in 1943, which position he held until his recent retirement.

Mr. Harris began his business career with Railway Specialty and Supply, P&M Company in 1910. After serving with the Armed Forces in World War I, he became associated with the Vermillion Malleable Iron Company and joined the Rail Joint Company in 1946, at Chicago.

Jack R. DeBacher, executive vice-president, SpeedWay Manufacturing Division, **Thor Power Tool Company**, has been elected full vice-president of the firm.

(Continued on page 80)

In the FINEST EQUIPMENT... CONTINENTAL RED SEAL POWER



MOBILITY PLUS VERSATILITY

WARNER & SWASEY
MULTI-PURPOSE
GRADALL
WITH CONTINENTAL
RED SEAL POWER
IN TRUCK AND IN
UPPERSTRUCTURE

No matter what the specific job—clearing land, ditching for irrigation, grading for railroads and highways, laying pavement or wrecking buildings—you'll note a pronounced swing, of late, to equipment with Continental power. The adoption of dependable Red Seals—gasoline, LPG or Cushioned Power Diesel—by more and more builders of construction and industrial equipment, reflects a spreading recognition, on the part of machine users, of this basic fact: There's a vast difference, in performance, dependability, economy and upkeep cost, between the ordinary engine and the Continental Red Seal that's engineered and built for the job.

SERVICE FACILITIES AND RED SEAL PARTS AVAILABLE EVERYWHERE



Continental Motors Corporation

MUSKEGON • MICHIGAN

6 EAST 45TH ST., NEW YORK 17, NEW YORK • 3817 S. SANTA FE AVE., LOS ANGELES 30, CALIF.
6214 CEDAR SPRINGS ROAD, DALLAS 9, TEXAS • 1252 OAKLEIGH DRIVE, EAST POINT (ATLANTA) GA.

Mall TOOLS CUT YOUR TRACK MAINTENANCE COSTS



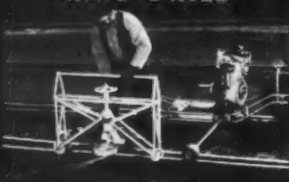
FROG & SWITCH GRINDER



RAIL SLOTTING



RAIL DRILL



RAIL GRINDER



IMPACT WRENCH

MALL has pioneered in the development of specialized tools—tools that reduce costs, increase efficiency and gets work done faster, easier and cheaper. Cut your railroad costs today! Use MALL Tools!

MALL TOOL COMPANY

PORTABLE POWER TOOLS
GASOLINE • ELECTRIC • AIR
7738 South Chicago Ave., Chicago 19, Ill.
Tell me more about money-saving
MALL Railroad Tools.

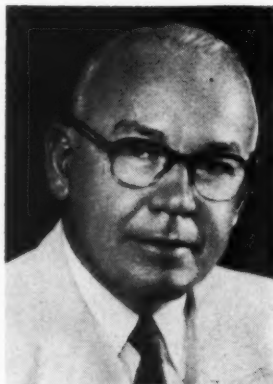
Name _____
Railroad _____
Address _____

RU-202

Supply Trade News (Cont'd)

Max K. Ruppert, president of the P. & M. Co., has been elected president of Poor & Co. He succeeds Eugene C. Bauer who has been elected chairman of the board to succeed V. C. Armstrong who has retired. For the time being Mr. Ruppert will continue as president of the P. & M. Co. which, along with a number of other companies in the railway supply and industrial fields, is a subsidiary of Poor & Co.

Mr. Ruppert was born on June 5, 1899, at Grand Rapids, Mich., and is a graduate of New Mexico Military Institute.



Max K. Ruppert

His first connection in the railroad field was with the Rock Island, beginning in 1920, which he served as chainman, rodman, ballast inspector and rail inspector. He has been with the P. & M. Co. since 1922 serving successfully as foundry inspector, service engineer, salesman, assistant eastern manager, vice-president and president. He was elected to the latter position in 1943.

John S. Miller has been appointed railroad sales representative for the Athey Products Corporation, with headquarters at Chicago. Mr. Miller has been connected with the railroad industry for over 18 years. He will promote the sale of the company's railroad equipment in the United States and Canada.

J. N. Todd, superintendent of scales and work equipment for the Southern, has joined the Cox and Stevens Electronic Scale Division of Revere Corporation of America, with headquarters at Wallingford, Conn. Mr. Todd will act as engineering consultant on scales and weighing equipment.

J. S. Peterson has been appointed manager of electronic sales, Scale Division, Fairbanks, Morse & Co., with headquarters at Chicago.

Raymond L. Howerton, manager of the sales training division of the Hyster Company, has been promoted to assistant manager, sales promotion department, with headquarters at Portland, Ore.

Klemp Metal Grating Corporation has announced the appointment of Dan W. Oran as executive director of sales with headquarters at Chicago.

Obituary

Harvey W. Cutshall, Chicago representative of the Electric Tamper & Equipment Co., and formerly vice president in charge of sales of this company, died on May 5, at the age of 80 years. Before entering the railway supply business Mr. Cutshall had a record of service on several railroads. He started his railroad career in 1892 as assistant agent and operator on the Rock Island, but left that road in 1896 to spend four years with the McCormick Harvesting Machine Company. From 1900 to 1912 he was superintendent of telegraph and signal engineer of the El Paso & Northwestern and the El Paso & Southwestern (both now part of the Southern Pacific). After leaving these roads he spent two years with Western Union as assistant to the general manager. In 1914 he went with the Frisco as supervisor of gas engine equipment. Six years later he became general manager of Mudge & Co., later absorbed by Fairmont Railway Motors, Inc. In 1923 Mr. Cutshall entered the service of Electric Tamper & Equipment Co. as vice president, and served in that capacity until several years ago when he became Chicago representative.

Donald J. Phillips, sales manager of the Austin-Western Works, Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, died April 26, at Aurora, Ill.



Utility

In any climate or terrain
... Kit Mobilunits are
extremely fit for the practical
purposes of industry.

Economical **MOBILUNITS**
designed to your specific
requirement for all type
field uses.

*
FREE DESCRIPTIVE
BROCHURE ON REQUEST

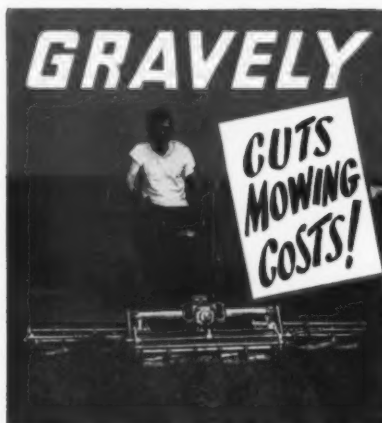
symbol **KIT** of distinction everywhere



MANUFACTURING COMPANY, INC.
1401 W. Seventeenth St., Long Beach 13, Calif.

Quality Durability Efficiency

MID-WEST FORGING & MANUFACTURING CO.



ONE 5-HP GRAVELLY POWERS 3 MOWING TOOLS

YOU CUT MOWING COSTS because ONE Gravelly Tractor powers all the tools shown—and more—21 in all!

NO MORE buying an engine for each tool! Instead, ONE 5-HP Gravelly with tools changed quickly (only four bolts) handles the job—for the moment, or the season!

SAVE MANPOWER too, since ONE man, with ONE Gravelly, can do the upkeep jobs of a crew of eight in the same time! Mechanize the upkeep jobs—get more done better, in less time.

3 SNOW REMOVAL TOOLS

afford YEAR-ROUND USE, in every season—an example of Gravelly's versatility.

**MORE
for your
MONEY!**

5-HP—more than twice the power of the usual power mower... all-gear drive, two speeds forward and REVERSE... 21 tools available!

Push-button starter optional

**WRITE...
GET THE FACTS!**

Send for 24-page Booklet, "Power vs Drudgery", that shows you how and why you get more for your money when you get Gravelly.

PROOF BY JOB-TEST!

FREE DEMONSTRATION
WE OFFER PROOF by on-the-job demonstration. Just write for literature or FREE Demonstration today!



GRAVELLY TRACTORS, INC.
5017 42nd STREET, DUNBAR, W. VA.

Helps From Manufacturers

The following compilation of literature—including pamphlets and data sheets—is offered free to railroad men by manufacturers to the railroad industry. To receive the desired information, write direct to the manufacturer.

1. WIRE ROPE. 24-page data booklet (DH128D) gives recommended uses covering more than 120 different types of wire rope. Rope diameters, construction, preforming, lay, grade and core are given. Charts cover weights and breaking strength. (Write: *Hazard Wire Rope Division, American Chain & Cable Company, Inc., Dept. RTS, Wilkes-Barre, Pa.*)

2. CONSTRUCTION PRODUCTS. 8-page folder "Construction Products" for March 1956 describes and pictures specific installations of Armco products for meeting construction and drainage problems. Folder includes photos of typical installations. (Write: *Armco Drainage & Metal Products, Inc., Dept. RTS, 8956 Curtis Street, Middletown, Ohio.*)

3. HYDRAULIC CRANE. 8-page bulletin in color, (AD2253) describes the Austin-Western Hydraulic Crane. Gives principal dimensions, performance data, lists of attachments and special equipment; also working ranges, manual boom extensions, minimum aisle width for 90° turn, hook speed. Also includes safe load chart. (Write: *Austin-Western Company, Construction Equipment Division, Dept. RTS, Aurora, Illinois.*)

4. GRILLES. 4-page punched catalog (F7757) describes the Uni-Flo Model ST continuous line air diffusing grilles for installation under windows with large glass areas. Includes diagrams, tables and illustrations. (Write: *Barber-Colman Company, Dept. RTS, Bockford, Ill.*)

5. STEEL GRATING. Bulletin (2448) describes the Blaw-Knox electroforged steel grating crossings of open mesh, self-cleaning construction. (Write: *Blaw-Knox Company, Blaw-Knox Equipment Division, Dept. RTS, Pittsburgh 38, Pa.*)

6. GRADERS. 8-page descriptive bulletin (31902) answers specific questions regarding performance of motor graders—tells the blade positioning story. Mechanical features, operator convenience and operating costs are also discussed. (Write: *Caterpillar Tractor Company, Dept. RTS, Peoria, Illinois.*)

7. SPRAY PAINTING. Maintenance painting catalog describes new DeVilbiss PCGA spray gun for ½ or ¾ hp air compressor. Also the PQBF paint pump and portable paint heater. Contains easy-to-read chart for selecting correct spray gun for various classes of materials, descriptive information and cross references. (Write: *The DeVilbiss Co., Dept. RTS, 300 Phillips Avenue, Toledo 1, Ohio.*)

8. WELDING. 140-page Pocket Data Book (TIS 2575) features simplified welding procedures for every base metal. Covers 120 welding rods, electrodes and welding compounds. Gives useful "how-to-weld" information and describes special welding operations. (Write: *Technical Information Service, Eutectic Welding Alloys Corporation, Dept. RTS, 40-40 172nd Street, Flushing 58, New York.*)

9. AIR TOOLS. Series of 8-page, 3-hole punched bulletins describe new Blue Brute line of Hand-Held Rock Drills, Wagon Drills, Paving Breakers and

Sheeting Drivers, Clay and Trench Diggers and Backfill Tampers. Bulletins include specification data, cutaway photos, and design features. (Write: *Worthington Corporation, Dept. RTS, Harrison, N.J.*)

10. AIR-POWERED EQUIPMENT. "Production and Plant Ideas," a new bi-monthly publication contains illustrated "idea" articles on the use of air-powered equipment in production and maintenance work. (Write: *Keller Tool Division, Gardner-Denver Company, Dept. RTS, Grand Haven, Michigan.*)

11. CRAWLER TRACTORS. 6-page, 2-color folder (CR-553-F) describes five models of new International diesel crawler tractors. Includes on-the-job photos and close-up of outstanding features and descriptive data. (Write: *Consumer Relations Dept., International Harvester Company, Dept. RTS, 180 N. Michigan Avenue, Chicago 1, Illinois.*)

12. STEEL FLOOR ARMOR. "Data and Specification Manual" describes HEX-TEEL steel floor armor for resurfacing wood decking and prolonging life of bridge floors. (Write: *Klemp Metal Grating Corporation, Dept. RTS, 6601 South Melvina Avenue, Chicago 38, Illinois.*)

13. ON-AND-OFF-TRACK CRANE. 8-page bulletin in color, (K-438), describes the Koehring Self-Propelled 205 RailAid for on-track and off-track work. Booklet gives operation data, on-the-job photos, descriptive data on work applications. (Write: *Koehring Company, Dept. RTS, Milwaukee 16, Wisconsin.*)

14. SWITCHMOBILE. 24-page booklet in color describes and illustrates the features and construction of the rubber-tired diesel-powered SwitchMobile for freight car switching. Also describes the Switch Tractor, a combination switcher-tractor for car moving, maintenance of way and other work. (Write: *Le Tourneau-Westinghouse Company, Dept. RTS085, Peoria, Ill.*)

15. WIRE ROPE SLINGS. 4-page bulletin (5308R) lists safe loads for slings of twenty sizes wire rope when used at various angles of application. Covers slings from ½ ton safe load to 48.7 tons. (Write: *Macwhyte Company, Dept. RTS, Kenosha, Wisconsin.*)

16. TIMBER CONNECTOR. 12-page data book "Teco Products and Services for Users of Wood and Forest Products" describes how and where six different types of Timber Connectors are used in attaining tighter joints in light and heavy wood construction. Includes photos, descriptions and specification tables. (Write: *Timber Engineering Company, Dept. RTS, 1319 18th Street, N.W., Washington 6, D. C.*)

17. ELECTRIC TOOLS. 44-page, 3-hole punched catalog (39C) describes the "Silver Line" and "Speed Tool" electric tools. Includes photographs and illustrations showing tools in use, with specifications and information on Thor tools introduced in last six months. (Write: *Thor Power Tool Company, Dept. RTS, Aurora, Illinois.*)



New York Central Photo



How smooth and beautiful this roadbed looks! Day and night heavy diesel freights and fast passenger trains roar over it and put the best track to test. Strains, stresses, constant hammering, expansion and contraction, subject roadbeds to terrific beating.

The tremendous pressure of our heavy railway spring washers gives enough reserve power to hold rails tight longer, to maintain bolt tensions, to reduce effectively your cost of maintenance.

THE NATIONAL LOCK WASHER COMPANY, NEWARK 5, N. J., U. S. A.

A COMPLETE LINE OF RAILWAY SPRING WASHERS

Economical, long-lasting crossings and platforms assured with Texaco Emulsified Asphalt 23...

Texaco Emulsified Asphalt 23 for grade crossings and station platforms offers these advantages:

1. *Texaco Emulsified Asphalt 23* has the adhesive and cohesive properties necessary to produce a surface that is waterproof, flexible and tough. It provides good drainage and stands up in long, hard service.

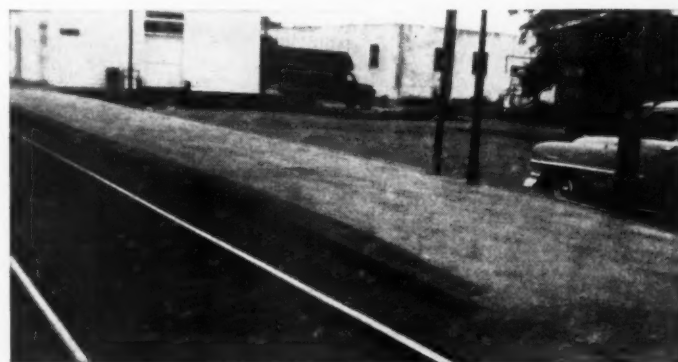
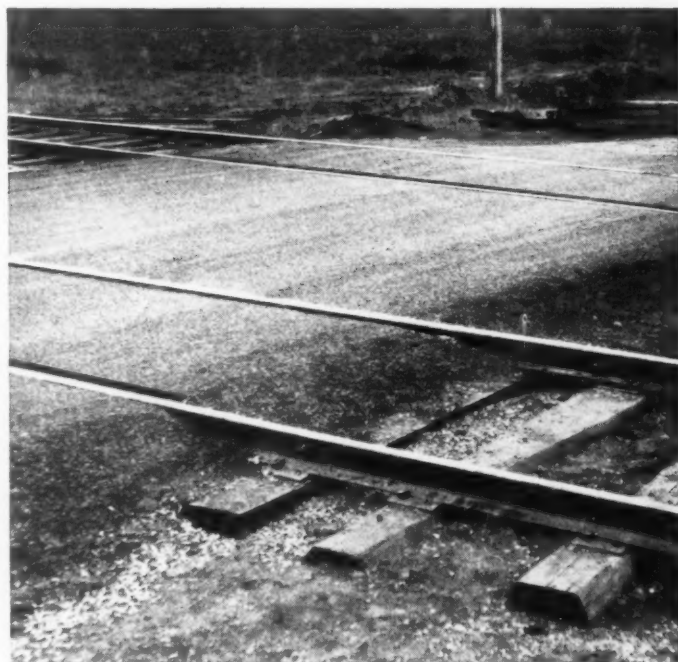
2. Aggregate does not have to be dried. *Texaco Emulsified Asphalt 23* can be mixed with either wet or dry aggregate. In fact, many railroads prefer to wet the aggregate before mixing.

3. No heating is required.

4. Only a small percentage of *Texaco Emulsified Asphalt 23* is needed to produce an ideal mixture.

Leading railroads have found that crossings of *Texaco Emulsified Asphalt 23* are long lasting; economical to construct and to maintain.

A Texaco Representative will gladly give you full information. Just call the nearest Texaco Railway Sales Office in New York, Chicago, San Francisco, St. Paul, St. Louis or Atlanta. Or write The Texas Company, *Railway Sales Division*, 135 East 42nd Street, New York 17, N.Y.



TEXACO Railroad Lubricants
AND SYSTEMATIC ENGINEERING SERVICE

IN ALL
48 STATES

TUNE IN...TEXACO STAR THEATER starring JIMMY DURANTE on television...Saturday nights, NBC.

